

Journal of the Royal Society of Arts

NO. 5040

NOVEMBER 1959

VOL. CVII

FORTHCOMING MEETINGS

WEDNESDAY, 4TH NOVEMBER, at 2.30 p.m. INAUGURAL MEETING. '*The Royal Society of Arts: its Past, Present and Future*', by Oswald P. Milne, F.R.I.B.A., J.P., Chairman of Council of the Society. (Before his address the Chairman will distribute certain of the Society's awards. Tea will be served after the meeting.)

MONDAY, 9TH NOVEMBER, at 6 p.m. The first of three CANTOR LECTURES ON '*Modern Technological and Commercial Education*', entitled '*Education for Industry and Commerce*', by A. A. Part, C.B., M.B.E., Under-Secretary, Ministry of Education.

TUESDAY, 10TH NOVEMBER, at 2.30 p.m. '*The Present Economic Position of Great Britain*', by C. F. Carter, M.A., Stanley Jevons Professor of Political Economy, Manchester University. Oswald P. Milne, F.R.I.B.A., J.P., Chairman of Council, in the Chair. (The first of two papers: see also 1st December.)

THURSDAY, 12TH NOVEMBER, at 5.15 p.m. COMMONWEALTH SECTION. '*Blindness in the Commonwealth*', by John Wilson, O.B.E., Director, Royal Commonwealth Society for the Blind. Godfrey Robinson, C.B.E., M.C., Chairman, The Royal National Institute for the Blind, in the Chair. (Tea will be served in the Library from 4.30 p.m.)

FRIDAY, 13TH NOVEMBER, at 7.30 p.m. FILM EVENING. (See programme following.)

MONDAY, 16TH NOVEMBER, at 6 p.m. The second of three CANTOR LECTURES on '*Modern Technological and Commercial Education*', entitled '*Technological Education*', by P. F. R. Venables, Ph.D., B.Sc., F.R.I.C., Principal, Birmingham College of Technology.

WEDNESDAY, 18TH NOVEMBER, at 2.30 p.m. ARMSTRONG MEMORIAL LECTURE. '*Recent Advances in Food Preservation*', by W. B. Adam, M.A., F.R.I.C., Director, The Fruit and Vegetable Canning and Quick Freezing Research Association. W. V. Smedley, Chairman, Smedley's Ltd., will preside.

MONDAY, 23RD NOVEMBER, at 6 p.m. The last of three CANTOR LECTURES ON '*Modern Technological and Commercial Education*', entitled '*Commercial and*

Higher Professional Education, by A. J. McIntosh, B.Com., Ph.D., Director, City of London College.

WEDNESDAY, 25TH NOVEMBER, at 2.30 p.m. '*Power Production and Transmission in the Countryside: Preserving Amenities*', by Sir Christopher Hinton, K.B.E., F.R.S., Chairman, Central Electricity Generating Board, and Sir William Holford, F.R.I.B.A., Professor of Town Planning, University College, London. The Rt. Honble. Lord Strang, G.C.B., G.C.M.G., M.B.E., Chairman, National Parks Commission, in the Chair.

MONDAY, 30TH NOVEMBER, at 6.45 p.m. Oration by Professor R. Y. Goodden, C.B.E., R.D.I., Master of the Faculty of Royal Designers for Industry, and Presentation of Diplomas to recently appointed R.D.I.s.

TUESDAY, 1ST DECEMBER, at 2.30 p.m. '*Problems and Prospects of the Economic Position of Great Britain*', by C. F. Carter, M.A., Stanley Jevons Professor of Political Economy, Manchester University. (See also 10th November.) Sir Philip Southwell, C.B.E., M.C., Managing Director, Kuwait Oil Co. Ltd., in the Chair.

THURSDAY, 3RD DECEMBER, at 2.30 p.m. COMMONWEALTH SECTION. '*Indians of British Columbia*', by Mrs. Mildred Valley Thornton, of Vancouver. Sir Alfred Bossom, Bt., LL.D., F.R.I.B.A., J.P., a Vice-President of the Society, in the Chair. (This paper, which will be illustrated with Mrs. Thornton's own paintings, has been arranged particularly for younger people (15-18), on whose behalf Fellows are invited to apply for tickets. Tea will be served in the library, after the meeting.)

WEDNESDAY, 9TH DECEMBER, at 2.30 p.m. '*Modern Trends in Industrial Design*', by Sir Gordon Russell, C.B.E., M.C., R.D.I., Director, Council of Industrial Design. Professor R. Y. Goodden, C.B.E., R.D.I., Master of the Faculty of Royal Designers for Industry, in the Chair. (The first of two papers: the second will be given on 23rd March.)

Fellows are entitled to attend any of the Society's meetings without tickets (except where otherwise stated) and may also bring two guests. When they cannot accompany their guests, Fellows may give them special passes, books of which can be obtained on application to the Secretary.

Official representatives of Companies in association with the Society may also attend, with one guest.

F I L M E V E N I N G

The first Film Evening of the Session will be held at the Society's House on Friday, 13th November, at 7.30 p.m., when the following two films will be shown:

Antarctic Crossing
My Word is My Bond

Antarctic Crossing (49 minutes), which was produced by World Wide Pictures Ltd. for the British Petroleum Company, is the film record (in colour) of the

59
OR,
ION
E,
AM
ON.
NAL
EN,
ND
NIC
OF
SIR
STD.,
ANS
SIR
ETY,
WN
OSE
ARY,

GN,
TRIAL
Y OF
OND

CEPT
ANY
INED

ALSO

E ON
WN:

URES
THE

NOVEMBER 1959

JOURNAL OF THE ROYAL SOCIETY OF ARTS

successful 1957-8 crossing of the Antarctic by Sir Vivian Fuchs' party. It is made almost entirely from material filmed on the Expedition, and graphically portrays the hazards and difficulties which had to be overcome. The film will be introduced by Mr. David Stratton, Deputy Leader of the Expedition.

My Word is My Bond (25 minutes) is also in colour and was produced for the Stock Exchange by Puritan Films in association with Film Partnership Ltd. The film first tells of the origination of the Stock Exchange and then describes how its business is done and how industry depends on the shareholder for its materials and plant. It will be introduced by its Producer, Mr. Robert Angell.

Tickets of admission are not required for this occasion, and Fellows are entitled to introduce two guests. Light refreshments will be served in the Library afterwards.

RESULTS OF THE OFFER OF ENDOWED PRIZES

In accordance with the provisions of certain bequests, the Society this year offered two prizes under the terms set out below. The results of these offers are now announced:

1. Howard Prize of £50 for Mechanical Motive Power

A prize of £50 was offered for a treatise on some aspect of the subject of motive agents.

Four entries were received. In the opinion of the judge, Mr. J. S. Tritton, M.I.C.E., M.I.Mech.E., the best entry was that entitled 'A Possible Nuclear Reactor System for the Propulsion of Smaller Ships', by Mr. A. N. Byford, Grad.I.Mech.E., A.M.A.S.M.E. Mr. Byford's essay is a carefully thought out and well balanced development report, showing the prospects which may be looked for in the development of various types of reactors as motive agents. It also gives practical examples of how the selected type could actually be applied to two ships of classes for which nuclear reactor propulsion may prove to be effective and economical.

The Council has now decided to award the prize of £50 to Mr. Byford. As Mr. Byford's is a long essay on a highly technical subject, it will not be published in the *Journal*, but a copy of it in typescript will be available for examination in the Society's House.

2. Fothergill Prize of £20 for Fire Prevention or Fire Fighting

A prize of £20 was offered for a descriptive essay or model embodying some new idea for the prevention or suppression of fire.

Ten entries were received. Of these, the judge, Mr. D. I. Lawson, Director, D.S.I.R. Fire Research Station, reports that the entry by Mr. E. C. Simpson, G.I.Fire E., suggesting methods for ensuring 'Safety in Paraffin Oil Heaters', comes nearest to a novel idea for fire prevention. Though the principles advocated are sound, however, one of them, which envisages the provision of an automatic snuffer operated by a swinging pendulum, is not fully worked out from an engineering point of view, and some further attention would have to be given to this aspect before the idea could be adopted. In view of this reservation, the

Council has decided that a prize of £10 should be awarded to Mr. Simpson (who, it will be remembered, was the only entrant to win a prize in last year's competition). Mr. Simpson's essay appears on page 862 of this issue of the *Journal*.

The Council has also decided that the entry by Mr. L. R. Leworthy, 'Automatic Fire Detection', should be commended for its excellent presentation.

THE PREMISES PURCHASE FUND

The adaptation and furnishing of the premises of which the Society recently became leaseholder has now been completed, and the Council feel that the time has come for serious consideration to be given to the ultimate purchase of the freehold, as permitted by the lease.

This lease provides that between 1970 and 1977 the Society may become the owner of this property for the price paid for it in 1957 by the present proprietors, The Legal and General Assurance Society Ltd., and the Council have therefore opened a fund, to be known as the Premises Purchase Fund, which they hope will reach the total required—viz., £157,612—by 1970. To this fund they have decided that the Society shall each year contribute a sum of £5,000, plus one half of the amount shown in the annual accounts as excess of income over expenditure; and in order to give immediate substance to the fund they have transferred to it the amount so far contributed for the purpose by Fellows (£1,442) and a sum of £10,000 from the Society's general funds.

In view of the size of the sum which will ultimately be needed, the Council hope that individual Fellows may not only approve the action they have taken, but also be willing to join them, even at this stage, in building up the fund. Either single donations, or covenanted subscriptions, to the fund will be most gratefully received by the Secretary at any time.

COMPANIES IN ASSOCIATION

The list of elections printed in the report of the meeting of Council on 12th October (page 795) includes the names of the first companies to be admitted into association with the Society in accordance with the provisions of the new Bye-law 68, which was adopted by the Society at the Annual General Meeting in July. The number and standing of these companies is a gratifying indication of the initial success of this project, and it is hoped that Fellows of the Society who are in a position to do so will continue to use their kind offices to bring it to the notice of limited liability companies on whose Board of Directors they serve.

A brochure giving full particulars of the benefits to be derived by companies in association, together with a form of application, will gladly be sent on request.

INDUSTRIAL ART BURSARIES EXHIBITION

The Exhibition of winning and commended designs submitted in the 1958 Industrial Art Bursaries Competition, which is on view at the Stoke-on-Trent

NOVEMBER 1959

JOURNAL OF THE ROYAL SOCIETY OF ARTS

College of Art until 2nd November, will be shown at the Edinburgh College of Art, Lauriston Place, Edinburgh 3, from 9th to 23rd November.

THE SOCIETY'S CHRISTMAS CARD

The design of this year's Christmas Card is proving very popular, and the supplies ordered on the basis of the sales of last year's card are already considerably depleted. Fellows who wish to be sure of obtaining copies of the 1959 card are therefore asked to place their orders as soon as possible. An illustrated order form, which gives full details of prices, is to be found at the back of this *Journal*.

MEETING OF COUNCIL

A meeting of Council was held on Monday, 12th October. Present: Mr. Oswald P. Milne (in the Chair); Mrs. Mary Adams; Sir Alfred Bossom; the Honble. G. C. H. Chubb; Sir Edward Crowe; Mr. R. E. Dangerfield; Mr. Geoffrey de Freitas; Sir George Edwards; Mr. P. A. Le Neve Foster; Mr. E. Maxwell Fry; Mr. Milner Gray; Sir Ernest Goodale; Professor R. Y. Goodden; Dr. Stanley Gooding; Dr. R. W. Holland; Mr. Antony Hopkins; Mr. William Johnstone; Lord Latham; Mr. F. A. Mercer; Sir Gilbert Rennie; Mr. A. R. N. Roberts; Sir Philip Southwell; Professor S. Tolansky; Mr. G. E. Tonge; Mr. C. M. Vignoles; Mr. Hugh A. Warren; Sir Griffith Williams and Miss Anna Zinkeisen; with Dr. K. W. Luckhurst (Secretary); Mr. G. E. Mercer (Deputy Secretary) and Mr. J. S. Skidmore (Assistant Secretary).

ELECTIONS

The following candidates, whose applications had been received since the last meeting in July, were duly elected Fellows of the Society:

- Addison, Peter, London.
Allen, Mrs. Hilary Diane, London.
Batty, Harry, Preston, Lancs.
Bellman, Sven E. H., M.D., Stockholm, Sweden.
Bolton, William Charles, B.Sc., Manchester.
Brice, Kenneth William, Harrow, Middx.
Brock, James Edward MacDougall, B.A., B.Sc., Plumstead, Cape Province, South Africa.
Butcher, Stanley Jack, London.
Carpenter, Joseph Ambrose, London.
Catok, Mrs. Lottie Meyer, Longmeadow, Mass., U.S.A.
Cattermole, George Ferrier McCaul, Worthing, Sussex.
Cook, Alfred Russell, London.
Cook, Ernest James, B.Sc., A.M.I.C.E., Merstham, Surrey.
Crawley, Victor James, Beckenham, Kent.
Datus, Jay, Phoenix, Arizona, U.S.A.
Day, James Wentworth, Ingatestone, Essex.
Day-Lewis, Cecil, C.B.E., M.A., London.
de Freston, Adrian Francis Annesley, London.
Edwards, Christopher Frank, Beckenham, Kent.
Ferneyhough, William Francis, St. Albans, Herts.
Foster, William Robert Brudenell, London.
Fotheringham-Parker, Philip, London.

- Given, Rear-Admiral John Garnett Cranston, C.B., O.B.E., Newcastle-upon-Tyne.
- Haase, Walter, M.S., D.Eng., Langenthal, Switzerland.
- Hanley, Michael Ignatius, A.R.Ae.S., Wirral, Cheshire.
- Hansom, Bernard Stephen, B.Sc., A.M.I.Mech.E., A.F.R.Ae.S., Slough, Bucks.
- Harper, Thomas, Bebington, Cheshire.
- Harris, Henry Roy, B.Sc., Nottingham.
- Harrison, John, A.R.I.B.A., Esher, Surrey.
- Hearns, Walter, Warrington, Lancs.
- Holdaway, Bernard, N.D.D., London.
- Hopkins, Captain Frank Henry Edward, D.S.O., D.S.C., Dartmouth, Devon.
- Howes, James Victor, Lostwithiel, Cornwall.
- Jaques, John Michael, Dip.Arch., London.
- Jared, The Reverend Arthur Henry, L.Th., Arva, Ontario, Canada.
- Kenchington, Lawrence Lee, B.Sc.(Eng.), M.I.C.E., M.I.Struct.E., Hatch End, Middx.
- Keyes, Kenneth William, B.A., Croydon, Surrey.
- Khan, Mohammad Samin, Dar-es-Salaam, Tanganyika, British East Africa.
- King, Clifford Robertson, C.B.E., Derby.
- Lang, Miss Phyllis Rose Amelia, B.A., London.
- MacAlister, Paul R., Lake Bluff, Ill., U.S.A.
- McDowell, Miss Dorothy, Belfast, Northern Ireland.
- Mason, William McIntosh, D.A., London.
- Mitchell, Sir Godfrey Way, Beaconsfield, Bucks.
- Mitchell, Thomas, M.B.E., B.Sc., A.R.I.B.A., A.M.I.Struct.E., London.
- Moncrieff, John Fallows, J.P., Folkestone, Kent.
- Morgan, Bruce Alexander, Dundee.
- Nobay, Napoleon, Kilindini, Kenya, British East Africa.
- Norcliffe, Norris Taylor, A.T.I., Bradford-on-Avon, Wilts.
- Onojuvbevbo, Richard Ogheneovo, London.
- Pascall, Clive, A.A.Dipl., F.R.I.B.A., London.
- Paton, Thomas Angus Lyall, B.Sc., M.I.C.E., M.ASCE., M.I.Struct.E., London.
- Peggs, Robert Deans, O.B.E., M.A., M.I.Mech.E., F.R.Ae.S., Farnborough, Hants.
- Powell-Jones, John Barrie, Leeds.
- Pratley, Henry Hugh Lewis, B.Eng., M.E.I.C., Montreal, Quebec, Canada.
- Rawnsley, John Ensor, A.M.I.E.E., Leeds.
- Reitinis-Reisini, Nicolas, D.Eng., New York, N.Y., U.S.A.
- Rowlandson, Sir Stanley Graham, M.B.E., J.P., F.C.A., London.
- Russell, Edward David Bacheler, M.I.Mech.E., Gravesend, Kent.
- Ryan, Kenneth, N.D.D., Kingston Hill, Surrey.
- Sammut, Joseph Lino, Balzan, Malta.
- Sayers, Dame Lucile Newell, D.B.E., Plymouth, Devon.
- Schreiber, Mrs. Gaby, F.S.I.A., London.
- Shackleton, Norman Lloyd, Ramsgate, Kent.
- Shvetz, Alexander E., White Plains, N.Y., U.S.A.
- Simon, Michael, Ph.D., Montreal, Quebec, Canada.
- Simpson, Colin, London.
- Smith, Miss Joan Yvonne, N.D.D., Birmingham.
- Smith, Mrs. Margaret Redfern, Keighley, Yorks.
- Sorley, Air Marshal Sir Ralph, K.C.B., O.B.E., D.S.C., D.F.C., Elstree, Herts.
- Spink, Albert Gordon, Newport, Mon.
- Stanier, William, A.R.C.A., M.S.I.A., Stourbridge, Worcs.

Stanton, Sean, Cork, Eire.

Stassen, Harold Edward, LL.D., L.H.D., Philadelphia, Pa., U.S.A.

Steele, John George Cyril, South Shields, Co. Durham.

Swallow, Frederick Colin, M.I.M.E., Burford, Oxfordshire.

Thomas-Howard, Clifford Phillip, London.

Turnbull, Reginald March, M.A., London.

Wignall, Mrs. Mary, Stoke-by-Clare, Suffolk.

Wisby, Rex Alastair, Sanderstead, Surrey.

Woodfield, Mrs. Eunice Emma, Doncaster, Yorks.

The following is the first list of Companies which were admitted into association with the Society in accordance with the new Bye-law 68:

Associated Electrical Industries Ltd., London.

Babcock & Wilcox Ltd., London.

Bakelite Ltd., London.

Bovril Ltd., London.

The British Petroleum Company Ltd., London.

The Charterhouse Group Ltd., London.

Chubb & Son's Lock & Safe Company Ltd., London.

Claude-General Neon Lights Ltd., London.

R. W. Crabtree & Sons Ltd., Leeds.

Esso Petroleum Company Ltd., London.

Ferranti Ltd., Hollinwood, Lancs.

The General Electric Company Ltd., London.

Glaxo Laboratories Ltd., Greenford, Middx.

Guest, Keen & Nettlefolds Ltd., Smethwick, Staffs.

William Hollins & Company Ltd., Nottingham.

International Computers & Tabulators Ltd., London.

Pilkington Brothers Ltd., St. Helens, Lancs.

Schweppes Ltd., London.

Shell-Mex & B. P. Ltd., London.

Staffordshire Potteries (Holdings) Ltd., Stoke-on-Trent, Staffs.

Tata Ltd., London.

Taylor Woodrow Services Ltd., London.

Temple Press Ltd., London.

Unilever Ltd., London.

Vickers-Armstrongs (Aircraft) Ltd., Weybridge, Surrey.

BENJAMIN FRANKLIN FELLOWS

Consideration was given to a preliminary list of names of those recommended by the Benjamin Franklin Fellows Committee for election as Benjamin Franklin Fellows of the Society.

JOINT COMMONWEALTH SOCIETIES' CONFERENCE

It was agreed to accept an invitation to the Society to become, through its Commonwealth Section, a member of the Joint Commonwealth Societies' Conference. The Chairman of the Commonwealth Section Committee was accordingly appointed to represent the Society on the Conference.

PREMISES PURCHASE FUND

Approval was given to the establishment of a new fund to be known as the Premises Purchase Fund (see separate Notice on page 792).

OTHER BUSINESS

A quantity of financial and other business was transacted.

REPORT ON THE SOCIETY'S EXAMINATIONS FOR THE SESSION 1958-1959*

INTRODUCTION

It is interesting to review the successive reports of the Society's Examinations Department, and in so doing to note that yearly, since the Report for the Session 1949-50, the theme which is more or less prominent throughout is the matter of the provision of external examinations in this country for young people between the ages of 15 and 16 who at present leave school with no possibility of presenting to a future employer a certificate of educational attainment awarded by an external authority. The Society still pursues its scheme for School Certificates for full-time pupils in secondary schools, and during the year under review 6,833 candidates—offering a total of 45,281 subject entries, and showing an increase of nearly 3,000 candidates and 20,000 subject entries over the previous year—are an indication of the growing demand in the secondary modern and technical school where the General Certificate of Education, directed towards other ends, is not a suitable measurement. The Grouped Course examinations, too, show a 25 per cent increase—from over 25,000 in 1958 to 31,000 in the present year.

It is interesting, too, to note the comment in the Report of 1949-50 that the work of the Department had probably reached its peak. Yet such is educational progress that the number of single-subject entries in the year under review is three times the figure of ten years ago.

The wide acceptance of the Society's examinations derives in a large measure from the policy of the Examinations Department in offering examinations which are shown to be in demand, rather than presenting syllabuses which are likely to stereotype the work carried out in the schools for which the examinations are proposed. The members of the Examinations Committee are representatives of central and Local Education Authorities, Teachers' Associations, professional bodies and business organizations—and it is on their composite advice that the examinations are framed. The various advisory and syllabus committees have the valued assistance of Inspectors of Schools, Heads of Schools and Colleges, and practising teachers.

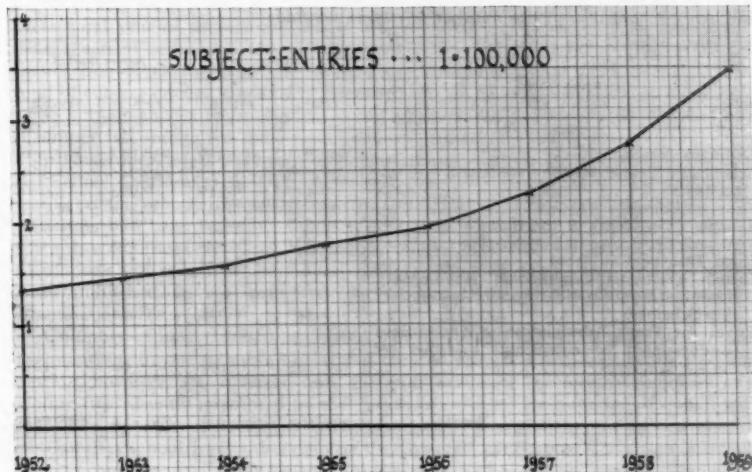
The accompanying graph clearly indicates the increasing volume of work carried out by the Examinations Department of the Society, and there are already signs that the upward tendency will continue, both at home and in certain territories in the Commonwealth, where, in the latter case, the Society enjoys the valuable co-operation of the educational authorities concerned and the West African Examinations Council. In the course of the next year or two it will be possible to see more clearly the future trend of the

* A fuller report, containing lists of prize-winners and medallists, and the individual reports of the Examiners in the various subjects, will be published as a separate pamphlet by the Examinations Department later this year, and a copy of it may be obtained by Fellows on application to the Examinations Officer.

NOVEMBER 1959

REPORT ON THE SOCIETY'S EXAMINATIONS

School Certificate examinations, as the Ministry of Education will no doubt shortly arrive at a decision regarding examinations of the type of the Society's School Certificate examination.



Graph illustrating the increase in the number of subject entries received by the Examinations Department

The grateful thanks of the Council are offered to the many educationists, on both the teaching and organizing sides of the educational service, who have given help and advice during the year.

ROBT. W. HOLLAND

ENTRIES AND PAPERS WORKED

The following table gives a detailed comparison of the number of subject-entries received for the various examinations conducted by the Society in the Sessions 1958-9 and 1957-8, and also of the number of papers worked:

Examination	Entries		Papers Worked	
	1958-9	1957-8	1958-9	1957-8
Ordinary (Single-Subject)	252,691	203,306	238,672	192,756
School and Senior School Certificates ...	51,069	31,603	49,745	31,380
Oral Tests	7,423	6,249	6,993	5,928
Grouped Course	31,063	25,637	30,164	24,783
Teacher's Certificate in Shorthand ...	818	753	794	733
Teacher's Certificate in Typewriting ...	504	492	493	478
Road Transport Subjects	1,282	1,352	1,232	1,242
British Transport Commission (Preliminary Examination of Candidates under Apprenticeship Schemes)	1,349	1,011	1,272	973
Royal Air Force Administrative Apprentices (Endorsement of certificates awarded by the Air Ministry)	68	101	68	101
Totals ...	346,267	270,504	329,433	258,374

GENERAL REMARKS

For the various examinations conducted by the Society during the past Session there has, once again, been a substantial increase in the number of entries. The total for 1958-9 is 346,267 as against 270,504 in 1957-8—an increase of 75,763.

In recent years there has been a marked increase in the volume of work carried out by the Examinations Department, and there is every indication that this upward trend will continue. The 'bulge' in the number of children born since the end of the war is now in the lower forms of secondary schools, and this may well tend in the near future to swell the entries for the School Certificate examinations and, later on, those for the Ordinary (Single-Subject) examinations taken by students in further education. This likelihood of further growth accentuates the importance which the Society has always attached to close liaison with the local education authorities in regard to the conduct of the examinations, and to the constant reviewing of examination syllabuses in order to keep them in line with the rapidly changing curricula and teaching methods of the schools.

ORDINARY (SINGLE-SUBJECT) EXAMINATIONS

For these, our main scheme of examinations, there was an increase in subject-entries of 49,385. This was spread over the four Series, approximately as follows: Autumn, 1958—7,500; Easter, 1959—6,500; Whitsun, 1959—9,000; Summer, 1959—26,500. It is interesting, and revealing, that the total of subject-entries at the Ordinary (Single-Subject) examinations in 1959 exceeded the grand total for all examinations offered by the Society in 1957—two short years ago. The most popular subjects were Typewriting, Shorthand, English Language, Arithmetic, and Book-keeping, but there was also an increased demand for the Shorthand-Typists' Certificates and for most of the other examinations; there was a satisfactory entry in Civics, Stage I (Elementary), which was offered for the first time in 1959.

SCHOOL AND SENIOR SCHOOL CERTIFICATE EXAMINATIONS

The reorganization of the Society's scheme of examinations for the award of school certificates has been warmly welcomed by the local education and school authorities throughout the country. It has helped considerably in encouraging more pupils to stay on at school for the completion of a five-year course of study. In 1959, the second year of the comprehensive scheme covering commercial, technical, and general school certificates, entries have been received from 6,738 candidates; for the Senior School Commercial Certificate examinations there were 95 entrants. The total of subject-entries was 45,281 as against 26,240 in 1958. In addition, there were 5,788 subject-entries from Nigeria—from 886 candidates for the School Certificate (Commercial) and 52 for the Senior School Commercial Certificate.

In November, 1958, the head teachers of all schools that presented candidates for the School Certificate examinations in that year were invited to submit their comments on the scheme in general, and in particular on certain aspects about which criticisms had been received. Their replies were interesting, and of great value to the sub-committees to which they were referred, and various amendments in the regulations and syllabuses for future examinations have been approved; full details were published in the pamphlet giving particulars of the School Certificate examinations for 1960.

A number of head teachers suggested that candidates should be permitted to take examinations in one or more subjects if they so wished. Consideration of this suggestion, however, was deferred until the publication of the recommendations of a Committee recently appointed by the Secondary School Examinations Council with the following terms of reference—"to review current arrangements for the examination of secondary school pupils other than by the General Certificate of Education examination, to consider what developments are desirable, and to advise the council whether, and if so, what, examinations should be encouraged or introduced and at what ages and levels". Officers of the Society have attended, by invitation, a meeting of that Committee, and answered questions on the general purpose and scope of the School Certificate scheme; the Society has now been asked to supply selected marked scripts in various subjects, together with question papers and marking schemes, for the consideration of the Advisory Panels of the S.S.E.C.

GROUPED COURSE EXAMINATIONS

The popularity of the School Certificate examinations has not as yet, as was thought probable, affected the increasing demand for the Grouped Course examinations, the total of entries for which rose from 25,637 in 1958 to 31,063 in 1959. This scheme of examination was designed for students in junior evening institutes, but entries are received each year from a large number of secondary school pupils.

TEACHER'S CERTIFICATE IN SHORTHAND

At the examination in November, 1958, there were 217 candidates, of whom 77 passed in all sections and 3 were 'referred' in the Speed Test only; in addition, 28 were granted exemption from Part I and 17 from Part II. This exemption is allowed at the discretion of the Society and is conditional upon completion of the examination by the candidate within twelve months. In May, 1959, there were 577 candidates, of whom 130 passed in all sections and 26 were 'referred' in the Speed Test only; in addition, 44 were granted exemption from Part I and 47 from Part II.

TEACHER'S CERTIFICATE IN TYPEWRITING

At the examination in November, 1958, there were 163 candidates, of whom 79 passed in all sections, 22 were granted exemption from Part I and 5 from Part II.

In May, 1959, there were 330 candidates, of whom 123 passed in all sections, 62 were granted exemption from Part I, and 7 were granted exemption from Part II.

OTHER EXAMINATIONS

Unfortunately, there was a reduction in the demand for the examinations in Road Transport Subjects, although every effort had been made by the National Committee in Road Transport Education, and the trade press, to publicize the value of the scheme. But there was an increase in the numbers for the First Year subjects, and it is hoped that this upward trend will be reflected in the entries for future examinations. There was, however, an increased demand for the examinations organized on behalf of the British Transport Commission, mainly owing to the fact that this year the scheme was extended to allow for the inclusion of the apprenticeship scheme of British Waterways. These examinations were held in May, 1959. Those for the endorsement by the Society of certificates awarded by the Air Ministry to Royal Air Force Administrative Apprentices were held in December, 1958, and March and July, 1959.

MEETINGS OF COMMITTEES

During the Session there have been, as usual, a large number of meetings of the various committees connected with the examinations, to the members of which the Society is deeply indebted for their help and advice.

Various changes recommended by the Advisory Committees have been approved. These include a revision of the syllabuses (a) in History of the British Empire, under the title of 'History of the British Commonwealth', (b) in Road Transport Accounts, and (c) for the award of the Shorthand-Typists' Certificates; the regulations for the award of the Clerk-Typist's Certificate were also amended. These changes will be operative in 1960.

In addition, a revised scheme for the award of the Teacher's Certificates in Shorthand and Typewriting and new syllabuses in Mathematics and Office Practice for the Grouped Course examinations were approved, to be introduced at the examinations in 1961.

FEES PAYABLE BY CANDIDATES AT OVERSEAS CENTRES

In view of the air mail charges and additional administrative expenses incurred in dealing with overseas entries, the Council of the Society have approved a small additional fee per subject-entry payable by candidates at overseas centres.

EXAMINATIONS IN GHANA

During the Session the Society was informed that, through pressure of work in connection with its school examinations, the West African Examinations Council had reluctantly decided that after 1959 it could no longer be responsible for the conduct of the Society's examinations in Ghana. Arrangements have now been made for the examinations in 1960 and succeeding years to be under the control of the Permanent Secretary of the Ministry of Education in Ghana.

The West African Examinations Council will continue to be responsible for the Society's examinations in Nigeria, British Cameroons, and Sierra Leone.

ASSOCIATE MEMBERSHIP

Four Silver Medallists at the Society's examinations in 1958 have been elected to Associate Membership.

MEDALS

The Worshipful Company of Clothworkers has again generously contributed towards the cost of the silver and bronze medals.

**GROUPED COURSE EXAMINATIONS, 1959, IN THE
ADMINISTRATIVE COUNTY OF LONDON**

*Number of Candidates, 1,539. Grouped Course Certificates Awarded:
Commercial, 76; General, 35; Technical, 341.*

ELEMENTARY

Subjects	Passed with Credit			Passed			Not Passed			Papers worked at Whitsun and Summer combined
	Whitsun	Summer	Total	Whitsun	Summer	Total	Whitsun	Summer	Total	
Arithmetic	11	5	16	14	14	28	11	37	48	92
Arithmetic & Accounts ...	1	7	8	5	13	18	7	16	23	49
Commerce	5	11	16	27	50	77	14	60	74	167
Economic Geography ...	2	2	4	19	15	34	48	31	79	117
*English	8	95	103	179	373	552	257	235	392	1,047
†English Language ...	5	51	56	62	170	232	57	141	198	486
French	3	2	5	18	3	21	17	18	35	61
History	—	—	—	12	2	14	11	13	24	38
Mathematics	172	184	356	115	178	293	79	311	390	1,039
Science	84	62	146	81	135	216	73	160	233	595
Shorthand, 50 w.p.m.	—	1	1	—	14	14	10	96	106	121
60 "	—	13	13	1	14	15	4	37	41	69
Technical Drawing ...	84	121	205	139	245	384	91	178	269	858
Trade Calculations ...	4	1	5	10	13	23	26	47	73	101
Typewriting	—	42	42	1	65	66	11	138	149	257
Totals	379	597	976	683	1,304	1,987	616	1,518	2,134	5,097

STAGE II (INTERMEDIATE)

Subjects	1st Class			2nd Class			Not Passed			Papers worked at Whitsun and Summer combined
	Whitsun	Summer	Total	Whitsun	Summer	Total	Whitsun	Summer	Total	
English Language ...	—	—	—	—	4	4	—	6	6	10
Shorthand, 80 w.p.m.	—	—	—	—	4	4	—	8	8	12
100 "	—	—	—	—	—	—	—	1	1	1
Typewriting	—	1	1	—	3	3	—	19	19	23
Totals	—	1	1	—	11	11	—	34	34	46

* English—Technical Grouped Course.

† English Language—Commercial and General Grouped Courses.

**GROUPED COURSE EXAMINATIONS, 1959, AT CENTRES OUTSIDE
THE COUNTY OF LONDON**

*Number of Candidates, 6,479. Grouped Course Certificates Awarded:
Commercial, 126; General, 92; Technical, 2,453.*

ELEMENTARY

Subjects	Passed with Credit			Passed			Not Passed			Papers worked at Whitsun and Summer combined
	Whit-sun	Sum-mer	Total	Whit-sun	Sum-mer	Total	Whit-sun	Sum-mer	Total	
Arithmetic	2	14	16	13	54	67	15	128	143	226
Arithmetic & Accounts	—	6	6	5	26	31	24	53	77	114
Commerce	3	1	4	32	44	76	32	40	72	152
Economic Geography	5	1	6	21	45	66	31	194	225	297
*English	179	292	471	931	2,256	3,187	530	1,309	1,839	5,497
†English Language ...	19	87	106	172	315	487	44	162	206	799
French	—	5	5	3	20	23	15	89	104	132
History	9	2	11	20	34	54	20	155	175	240
Mathematics	670	1,346	2,016	423	1,126	1,549	455	1,383	1,838	5,403
Science	401	966	1,367	499	1,242	1,741	459	1,028	1,487	4,595
Shorthand, 50 w.p.m.	3	2	5	10	16	26	61	83	144	175
" 60 "	9	18	27	13	12	25	21	15	36	88
Technical Drawing ...	305	750	1,055	625	1,422	2,047	471	969	1,440	4,542
Trade Calculations ...	121	169	290	256	450	706	499	986	1,485	2,481
Typewriting	43	26	69	39	49	88	37	86	123	280
Totals	1,769	3,685	5,454	3,062	7,111	10,173	2,714	6,680	9,394	25,021

* English—Technical Grouped Course.

† English Language—Commercial and General Grouped Courses.

EXAMINATIONS IN ROAD TRANSPORT SUBJECTS, 1959

	<i>Papers Worked</i>	<i>1st Class</i>	<i>2nd Class</i>	<i>Not Passed</i>
<i>1st Year—Road Transport Operation (Passenger) ...</i>	194	28	128	38
" " " (Goods) ...	69	8	40	21
Communication and Report Writing ...	234	29	135	70
Road Transport Accounts and Statistics	236	11	104	121
<i>2nd Year—Road Transport Operation (Passenger) ...</i>	81	33	40	8
" " " (Goods) ...	30	4	16	10
Elements of Road Transport Engineering	62	7	30	25
Road Transport Accounts and Statistics	108	7	48	53
<i>3rd Year—Road Transport Operation (Passenger) ...</i>	69	35	31	3
" " " (Goods) ...	18	2	12	4
Road Transport Accounts and Statistics	50	1	27	22
Economics Applied to Road Transport ...	81	9	49	23
Totals ...	1,232	174	660	398

SENIOR SCHOOL COMMERCIAL CERTIFICATE EXAMINATIONS, 1959

Candidates, 147; Full Certificates Awarded, 45.

<i>Subjects</i>	<i>Number of Papers Worked</i>	<i>Passed 1st Class</i>	<i>Passed 2nd Class</i>	<i>Not Passed</i>
Accounts ...	130	10	61	59
Arithmetic ...	111	19	44	48
Commerce ...	139	4	85	50
English Language ...	173	13	79	81
English Literature ...	87	7	38	42
French ...	30	7	12	11
Geography ...	53	—	14	39
History ...	15	—	9	6
History of the British Empire ...	42	5	27	10
Mathematics ...	37	6	14	17
Shorthand, 80 w.p.m. ...	174	—	100	74
Shorthand, 100 w.p.m. ...	46	—	37	9
Typewriting ...	225	68	74	83
Totals ...	1,262	139	594	529

SCHOOL CERTIFICATE EXAMINATIONS, 1959

*Candidates, 7,624. Full Certificates Awarded: School Certificate, 1,181;**School Certificate (Commercial), 772; School Certificate (Technical), 467.*

Subjects		Number of Papers Worked	Passed with Credit	Passed	Not Passed
Accounts	...	1,927	189	688	1,050
Arithmetic	...	4,170	701	1,560	1,909
Art	...	257	33	93	131
Biology	...	257	8	85	164
Chemistry	...	305	28	92	185
Civics	...	701	43	303	355
Commerce	...	2,592	128	1,646	818
Cookery and Nutrition	...	320	91	207	22
English Language	...	7,471	591	3,880	3,000
English Literature	...	2,713	113	1,334	1,266
*French	...	693	70	339	284
General Science	...	1,433	83	541	809
Geography	...	3,600	154	1,355	2,091
Geometrical and Technical Drawing	...	2,483	306	1,131	1,046
†German	...	19	2	10	7
History	...	1,798	100	776	922
History of the British Empire	...	652	30	219	403
Housecraft	...	28	7	19	2
Human Biology and Hygiene	...	238	8	107	123
Italian	...	2	1	1	—
Mathematics Paper A	...	3,676	743	957	1,976
Mathematics Paper B	...	2,984	614	888	1,482
Mechanics	...	459	77	193	189
Metalwork (with Drawing)	...	1,226	251	701	274
Needlecraft	...	181	38	102	41
Physics	...	1,809	319	576	914
Religious Knowledge	...	405	79	201	125
Shorthand, 50 w.p.m.	...	1,274	161	298	915
Shorthand, 60 w.p.m.	...	955	379	298	278
Spanish	...	2	—	—	2
Typewriting	...	2,733	433	876	1,424
Welsh	...	23	8	13	2
Woodwork (with Drawing)	...	997	180	580	237
Totals	...	48,483	5,968	20,069	22,446

* 81 candidates took the oral test in French : 22 passed with credit and 24 passed.

† 5 candidates took the oral test in German : 4 passed with credit and 1 passed.

NOVEMBER 1959

REPORT ON THE SOCIETY'S EXAMINATIONS

ORDINARY (SINGLE-SUBJECT) EXAMINATIONS

AUTUMN SERIES, 1958, AND EASTER, WHITSUN, AND SUMMER SERIES, 1959

Subject	Stage	Papers worked	1st Class (or Passed with Credit in Stage I)	2nd Class (or Passed in Stage I)	Not Passed	Total number of papers worked in each subject	
						1959	1958
Accounting	III	103	1	30	72	103	186
Advertising	III	32	2	13	17	32	28
Arithmetic ...	I	16,386	3,947	6,185	6,254	19,405	14,057
" "	II	2,772	384	737	1,651		
" "	III	247	7	60	180		
Book-keeping	I	9,121	1,320	3,696	4,105	14,270	12,909
" "	II	4,191	925	1,439	1,827		
" "	III	958	39	385	534		
Cargo Insurance	III	6	3	2	1	6	11
Central and Local Government	II	103	17	49	37	103	125
Civics	I	104	18	50	36	104	—
Commerce ...	I	3,430	241	1,523	1,666	5,084	4,442
" " (Finance)	II	1,481	26	577	878		
" " (International Trade)	III	50	2	36	12		
Commercial Law	III	120	1	63	56	157	250
" " (Marketing)	III	3	1	1	1		
Commercial Law ...	II	28	—	14	14		
Common Law	III	129	1	49	79	17	13
Company Law	II	17	1	8	8		
Company Law	III	55	13	23	19		
Costing	III	47	3	28	16	102	84
Costing	II	86	3	27	56		
Danish	III	33	4	10	19		
Danish	I	6	—	3	3	119	86
" "	II	1	1	—	—		
Dutch	III	2	—	2	—		
Dutch	I	5	2	3	—	11	8
" "	II	4	—	2	2		
Economic Geography	III	2	1	1	—		
Economic Geography	I	2,129	79	602	1,448	2,362	2,190
" " "	II	120	4	46	70		
" " "	III	113	—	12	101		
Economic & Social History	II	465	1	134	330	611	528
Economics ... " " ...	III	146	—	23	123		
Economics ... " " ...	II	88	15	42	31		
Elements of English Law	II	325	47	174	104	413	1,479
Elements of English Law	II	323	7	79	237		
English (with Literature)	I	2,842	102	1,563	1,177		
English (with Literature)	II	553	20	311	222	3,913	3,973
" " " " " "	III	518	28	248	242		
English for Foreigners	I	2,665	923	889	853		
English for Foreigners	II	2,665	514	1,291	860	5,790	4,830
" " " " " "	III	460	50	201	209		
English Language ...	I	28,801	1,423	14,777	12,601		
English Language ...	II	10,189	299	3,963	5,927	39,627	27,951
" " " " " "	III	637	9	112	516		
Esperanto	I	16	6	4	6	42	29
" " " " " "	II	18	8	6	4		
" " " " " "	III	8	3	4	1		
French	I	2,403	226	757	1,420	2,938	2,342
" " " " " "	II	383	53	104	226		
" " " " " "	III	152	15	64	73		
German	I	305	46	118	141	512	456
" " " " " "	II	151	35	58	58		
" " " " " "	III	56	4	37	15		

JOURNAL OF THE ROYAL SOCIETY OF ARTS

NOVEMBER 1959

ORDINARY (SINGLE-SUBJECT) EXAMINATIONS
AUTUMN SERIES, 1958, AND EASTER, WHITSUN, AND SUMMER SERIES, 1959—continued

Subject	Stage	Papers worked	1st Class	2nd Class	Not Passed	Total number of papers worked in each subject		
			(or Passed with Credit in Stage I)	(or Passed in Stage I)		1959	1958	
History	I	899	13	280	606	899	638	
History of the British Empire	I	113	2	34	77			
" "	II	248	4	63	181	438	408	
" "	III	77	1	24	52			
Income Tax Law & Practice	III	14	3	8	3	14	25	
Italian	I	257	106	89	62			
" "	II	95	35	40	20	371	328	
" "	III	19	4	9	6			
Law of Evidence and Civil Procedure	III	2	—	2	—	2	7	
Law of Trusts	III	9	—	4	5	9	9	
Norwegian	I	7	1	4	2			
" "	II	5	2	2	1	13	11	
" "	III	1	—	1	—			
Public Administration	III	140	1	37	102	140	77	
Real Property and Conveyancing	III	11	1	6	4			
Russian	I	64	19	21	24	11	16	
" "	II	12	2	7	3			
" "	III	10	1	4	5	86	62	
Secretarial Duties	II	1,131	62	682	387	1,131	741	
Shipping Law and Practice	III	23	—	5	18			
Spanish	I	374	64	136	174			
" "	II	123	28	31	64	564	448	
" "	III	67	8	30	29			
Statistics	II	106	34	51	21			
" "	III	19	6	10	3	125	67	
Swedish	I	1	—	1	—			
" "	II	2	1	1	—	4	5	
" "	III	1	—	—	1			
Typewriting	I	41,002	14,608	12,635	13,759			
" "	II	23,187	1,535	8,108	13,574	70,534	58,873	
" "	III	6,345	181	1,646	4,518			
Welsh	I	28	8	14	6	28	24	
Shorthand-Typist's Certificate	Stage	Papers worked	Passed with Distinction	Passed	Not Passed			
	II	3,995	365	1,994	1,636	4,489	3,919	
	III	494	34	161	299			
Shorthand :		Papers worked	Passed with Credit	Passed	Not Passed			
50 words per minute	...	16,846	2,634	3,585	10,627	61,608	50,848	
60 " " "	...	12,641	4,119	3,459	5,063			
80 words per minute	...	18,416	10,442	7,974				
100 " " "	...	8,615	3,859	4,756				
120 " " "	...	4,445	1,533	2,912				
140 " " "	...	575	213	362				
150 " " "	...	47	21	26				
160 " " "	...	23	18	5				
In addition, the results of 2,130 papers worked at oversea centres have not yet been received.						Totals	236,542	
							192,756	

TRADE AND THE BAMBOO CURTAIN

A paper by

THE EARL OF VERULAM, M.A., F.B.I.M., J.P.,

read to the Society on Wednesday, 20th May,

1959, with Sir Alexander Grantham, K.C.M.G.,

late Governor of Hong Kong, in the Chair

It is presumption that I, who have spent but two weeks of my life in China, should attempt to present this paper. Without any knowledge of one of the world's most difficult languages, without the ability to read a single Chinese ideogram, with no personal understanding of the world's oldest surviving culture, my judgements may well be false and my observations unfounded.

It may, however, be said that those of British nationality who have passed through the Bamboo Curtain since 1949 are but few in number—diplomats, soldiers, a few missionaries, a few scientists, a few politicians, a handful of men of business, and a number of tourists from Hong Kong. It may be said, too, that the views of any of these, honestly expressed, must cast some light on the world's most fascinating enigma and its most critical conundrum.

My only qualifications for this task are that I have travelled extensively since the 1939–45 War, in search of exports to and purchases from more than one hundred sovereign states, in all continents; so inveterate a traveller can claim perhaps a certain expertise in the assessment of people, situations and places. I can offer no other pretext for presenting to you this assessment of the business possibilities of the so-called People's Republic of China, or New China, and I must rely on you to discount my shortcomings. I was in China for only a fortnight, in January, 1958. Most of my time was spent in Peking and Canton, capital cities respectively of the north and the south. My paper is illustrated with photographs that I took myself, at the time; if they have any merit, it is mainly because the miniature camera appears to be as welcome and as acceptable in Communist China as it is suspect in the U.S.S.R.

The population of Communist China is, at one and the same time, its greatest strength and its overwhelming weakness. In 1954 the National Bureau of Statistics published in Peking the results of the June, 1953, Census of Population. These showed the mainland as being inhabited by 582,603,417 people, or almost three times the then known population of the Soviet Union, 145 million more than the combined populations of the Republics of India and Pakistan, and 21·7 per cent of the population of the world. It is said that, if present trends throughout the world continue, half the population of the globe will be Chinese by the year 2000. Already in 1958 the official figure for the population of China was quoted as 640 million people, of whom 40 million were said to live in cities and towns, the remainder on the land. In addition, the number of 'overseas Chinese', in all parts of the world, is said loosely to be a further 30 million. It is manifestly not

possible to check the accuracy of these figures, but the demographic fact of gross population pressure is everywhere apparent.

I need not mention that the standard of living, throughout China, is very low indeed, even in the cities. I was told that, on the land, the minimum yearly wage of those employed is 300 yuan, guaranteed by the State. At the official rate of exchange, a minimum agricultural wage of yuan 300 is equivalent to £43 10s. 6d. a year or 16s. 9d. a week.

The Chinese dollar (or yuan) is an internal currency only, the official rate of exchange for travellers being yuan 6.893 to the pound sterling. This means that, at the official rate, one Chinese dollar is worth 2s. 11d. to-day; as however is the case with other Communist currencies, the official rate bears no relationship to the purchasing power of the currency, which is substantially less than its apparent value implies. The average rate of pay in the cities is somewhat higher than that on the land, and varies according to the type of employment involved. It may be readily conceded that personal affluence is not the target to which every individual with authority aspires, as is so shamelessly the case in Communist Russia.

These bare facts of population and of currency, expressed as a standard of living, must be basic to any consideration of the prospects of trade with Communist China. The other ineluctable circumstance of the present is that, since the rise of Sun Yat Sen in 1924, China has been the victim of a succession of wars, rebellions, revolutions, occupations and disturbances, several of them engineered from outside; these have tended to diminish or divert the output of the traditional Chinese export goods (for example tung oil, liquid eggs, bristles and silver) and concurrently to rob the country of the means to pay for imported goods.

But, to the visitor, there are certain features of this market which give it an attraction all its own. First and above all, the Chinese are a people who combine ability with charm, in marked degree, and couple therewith a notable measure of integrity as traders. Secondly, the size of the country and the immensity of its population together imply that the market must be a very large one, which its own growing industrial resources cannot yet possibly supply. Thirdly, it may be postulated that the political possibilities of a growing trade with New China are of some significance to the development of the free world. Lastly, the Chinese market is one that offers scope to the industries of this country (and indeed to the industries of all manufacturing countries) of startling magnitude. May I speak of these four topics in order?

First, the people. To the foreigner the first impressions of this great country are visual, and therefore incomplete; they also come from conversations with a minority who speak European tongues, and whose positions and outlook may therefore perhaps be regarded as privileged; these are the guides, the officials, the staff on trains and aircraft, hotel servants, and (to a certain extent) businessmen, or rather the senior officials in the trading corporations who conduct trade with foreigners.

These people are shrewd and industrious, they are also reliable. Their aim

appears to be to drive a hard bargain, but they achieve their purpose by sustained pressure and skilful argument, not by the more childish 'take it or leave it' approach, which is usual in the Soviet Union. It is a notable achievement of Communism that bribery, corruption and even the smallest tips seem to have been abolished in China. Despite all that is new, 'the leap into Communism', the doctrine of the hundred flowers, organization into communes, etc., there is an overwhelming sense of tradition in every Chinese. Respect for the past is curiously mingled with hope, even optimism, as to the future. The cup of scented tea is a symbol of courtesy and even hospitality; it contrasts strangely with the interminable bottles of synthetically flavoured mineral water that are the concomitants of all negotiations in Russia. In Moscow negotiations tend to be marked by suspicion and lack of mutual understanding; in Peking there are smiles, unbounded patience and sustained friendliness, even when the business of the moment has revealed marked differences between the negotiating parties.

Negotiations are conducted through an interpreter, even though there be a knowledge of English on both sides of the table. This method puts the foreigner tactfully at a disadvantage, as he does not know what is being said on the other side, but it also gives him time to think out his next sentence in advance. It gives a Chinese amanuensis time to record in writing as much of the discussion as he feels to be necessary, and to record it in his own language. Despite negotiations lasting almost daily for a fortnight, I never once felt that I had been tricked into some verbal misunderstanding, or that the other side was attempting to ignore what had been agreed previously. It is probably true (though they would not admit it) that many of those who do business with foreigners underwent their early training with one of the great British or international firms on the China coast, meaning that the ways of the commercial west are understood.

An example of the difference in outlook and experience in Peking, as against Moscow, is to be seen in the attitude to sterling. Both countries have a controlled decimal currency. Neither the rouble nor the yuan can be exported, nor are they quoted in the markets of the world. Trade must be conducted in other currencies, and accordingly tenders must be submitted in those currencies. In Moscow a quotation of £248 17s. 6d. per long ton, which may apply to a metal purchased on the London Metal Exchange for sale anywhere in the world, has sometimes to be converted into decimal pounds per short ton of 1,000 kilogrammes, before it will be understood, because 17s. 6d. is assumed to represent .176 of £1. In Peking the intricacies of sterling and even of avoirdupois seem to be readily understood, because the Chinaman is more worldly wise.

It is significant that one of the reforms of Mao Tse Tung has been that Russian should be taught as the second language, and English as the third, in all Chinese schools where languages are studied. Furthermore, measures have been promulgated which will occasion, in the course perhaps of the next two or three generations, that the language taught in all schools should be Mandarin, that it shall be written from left to right and top to bottom (as all Chinese newspapers have been printed since 1956), rather than from top to bottom and from right to left; additionally, Mao has passed laws requiring the teaching of the Roman

alphabet and a system of phonetic transliteration of Mandarin into Roman characters, which is based on the English alphabet plus four characters, and a standardized form of English pronunciation. These reforms alone, if they succeed (and the obstacles are said to be formidable), will mean that in due course and for the first time a very large part of the population will be able to speak and write the same language, using an alphabet with 30 letters. It is said by those with a knowledge of the language that such a target is theoretical rather than practical, that the semantic difficulties are formidable, that it is not necessarily possible to reduce the 30,000 or so characters at present in use down to 30 letters, especially when the monosyllabic structure of the Chinese language depends (when spoken) on the tonality applied by the speaker to the monosyllable, to convey contrasted meanings. I am told, for example, that the monosyllable *fu*, written *FU* in English, can be pronounced with four different tonalities, to mean either skin or happiness or palace or father.

At the present time an educated Cantonese cannot converse with an educated Pekingese by word of mouth, but each can talk to the other at surprisingly high speed with a pencil and small pad of paper, passed rapidly from one to the other. This strange ability to converse only in writing, which even many of the more primitive peasants have, places great strain on any statistician who sets out to measure literacy in the Far East.

From the trade angle, the significance of these facts is that (ignoring for the moment political factors) a great and historic people is trying to take 'the great leap forward'. Apart from traditional connections between the English-speaking world and China, the people of this great potential market are learning English as their second foreign language (and English is incidentally a much easier language to learn than Russian) and they are aiming to unite their own people with one spoken Chinese idiom, which is also to be written in the characters of the West and with an English phonetic system. These circumstances alone would seem to justify any attempt to make common ground with them.

My second theme related to the size of the country and of the potential market. At present that market for imported goods from the West is small. Exports to the United Kingdom in 1957 amounted to £14 million and imports from the United Kingdom to £12 million. Trade in 1958 was rather larger, exports to the United Kingdom being up by one-third and imports from the United Kingdom doubled. The size of the market in present terms cannot be assessed, because of the reluctance of the Chinese to publish reliable statistics and in particular because of the extent of present trade with other countries of the Communist *bloc*, the nature and size of which is probably not considered fit material for publication; finally the embargo and its aftermath still leave a sour taste in the Communist mouth.

On the other hand there can be no doubt as to the size of the market, and as to its need for capital and consumer goods of most kinds. The hotels of Peking are full of technicians from Russia, Poland, Czechoslovakia, Hungary and Eastern Germany, concerned apparently with the supply of capital equipment of one kind or another, and generally also being commissioned to instal it, or

at least to supervise its installation. Peking's third cotton mill is now being built; the first and the second are equipped largely with machinery imported from Chemnitz and the traditional centres of Eastern Germany. There is petrol rationing and the automobiles in the streets are few; the commonest make is the Warsaw, which is said to be a copy of the French 'Vedette', made in Russia as the 'Pobeda' or 'Victory' car, and now manufactured in Warsaw under licence to the Russians and shipped to China from Danzig. Many of the trams and trolley-buses in the streets are made by Skoda, in Czechoslovakia, or by Ganz in Hungary. Much of the heavy electrical equipment displays labels indicating similar origins. The recent trade agreement signed by China with Soviet Russia provides for the construction over the next few years of seventy-eight new enterprises, in the fields of chemicals, coal, metals, and oil.

There is talk everywhere of mighty electrical development. The new iron and steel plants at An-shan in Manchuria, started by the Japanese and greatly extended since, are said to manufacture 5,000 different products. Innumerable references to An-shan occur in the propaganda literature available wherever foreigners go in China. The national output of steel in 1952 was 1,350,000 tons, and at the end of the first Five Year Plan in 1957 it was more than trebled at 5,240,000 tons. The target for the end of the second Five Year Plan is 12 million tons in 1962, and the British level of production (of some 23 million tons of steel) is to be passed at the end of the third Five Year Plan in 1967. (The Communist world is at present much occupied in planning to achieve targets higher than the present production levels of western countries, in many products; the possibility that western production may also increase is discounted; the hearer is left to wonder whether Communism is Achilles and Capitalism the Tortoise, or *vice versa*.)

In parenthesis, one may perhaps be forgiven for commenting at this point that the blatant propaganda of Soviet Communism in its earliest days is not being repeated on the same scale in China to-day. Pictorial representation of the iniquities of capitalism, and of the glories of Communism, are much less frequent in present-day Peking, at the start of the second Five Year Plan, than they are in Moscow at the beginning of the fifth decade since the October Revolution. Portraits of Communist leaders are not common in China as they are in the Soviet Union. One would like to imagine that this change in method takes into account the shrewder subtleties of the Chinese mind. Both Governments, however, although they officially scorn the cruder incentives used by Capitalism to obtain output (piece-work, bonuses, and the like), and despite the cherished example of Alexeiitch Stakhanov, appear to be persuaded that imaginary competition with the alleged industrial outputs of the West will stimulate the individual to do more.

When driving in a taxi, with a Chinese guide, in the sordid tropical streets of East Canton, we came to an area of the City where the main thoroughfares were bedecked with the flag of New China, and streamers innumerable were strung across the carriageway; I felt that perhaps this would prove that my assessment of the Chinese official attitude to primitive forms of propaganda

was wrong. I asked my guide what this blaze of red, black, white and gold might mean, and particularly the Chinese texts running horizontally across the streamers. 'DEATH TO THE ENEMIES OF THE PEOPLE', he replied, with a vigour that shook his slender frame through and through. By way of conversation, I inquired delicately whether I was counted amongst the Enemies of the People, or whether that privilege was reserved for my country's kinsmen in the United States of America. 'Oh, no, comrade', he replied, 'the Enemies of the People are mosquitoes, flies, beetles and sparrows, who seek to bring death to our City'.

The current passion for hygiene in the streets of the cities of China is impressive, and one of the great achievements to be attributed to Mao. In Peking and Canton brightly-coloured litter-baskets are everywhere apparent, and everywhere used. Pedestrian crossings and traffic lines are everywhere being painted and repaired. Vast works of sewerage and drainage have been undertaken, to make safer and more pleasant the moats and fish-ponds that surround the Imperial Palaces and the Forbidden City. By municipal decree, and to some vast integrated plan, public lavatories innumerable are being constructed throughout Peking.

I must not dwell for too long on details. There can be no question that New China is marching forward, and that she appears to know in which direction she wants to go. The advance is towards industrialism, and (despite official pressure in the contrary direction) from the land to the villages, and from the villages to the towns and cities. Already there is an immense demand for goods that are not yet made, or not yet made in sufficient quantities, but the cash and credit to buy them from the West is not available. Large orders have been placed in this country for steel sheets, steel tubes, tractors, motor vehicles, electrical apparatus, textile machinery, and plant and equipment of various specialized kinds. In relation to the potential, however, the quantities have been small, as have the quantities ordered or imported from other western countries. The Soviet Union has seen to it that the main suppliers of capital goods, and of credit, are in the Eastern *bloc* countries, west of the Ural Mountains. This is manifestly not what China wants, her citizens and her officials make that very plain to the visitor, but it is what she can and must (at present) have. There is every indication that the Chinese do not order goods unless they know how they are going to pay for them, and there is likewise much evidence that prices paid in Peking are known at once in Moscow, and *vice versa*. There is strong pressure for barter deals, indeed this pressure is much stronger in China than in Russia; the western trader and manufacturer, and the western financial systems, cannot, however, offer credit in exchange for promises of cargoes of liquid eggs, which perhaps have not yet been laid. Just as in Russia, there is surprisingly little understanding of the fact that, in the West, day-to-day business decisions are taken by the trader and not by the Government.

There is little or no market as yet for imported consumer goods. Quantities of soap, toothpaste and toilet articles are on display in the shops, made in England and smuggled through from Hong Kong (an operation that appears to be carried on, on a substantial scale, despite the bristling machine-guns on the Chinese side of the frontier). Dried milk from several countries, especially Denmark, is

available in Chinese shops and bazaars in quantity. Foreign clocks and watches are available, as are imported cameras and instruments; Swiss watches are even advertised in posters on the hoardings, a situation impossible in the Soviet Union. In a shop in Morrison Street, one of the main shopping centres of Peking, I saw a window-display comprising (against a black satin background) a German reflex camera from Brunswick, mounted on its tripod and looking out of its Cyclopean eye at the two other occupants of the window, a bust of Lenin on its right and opposite it a life-size copy of the Venus of Milo.

I put in third place of importance, amongst the four topics that I propose to discuss this afternoon, the political possibilities of a growing trade with Communist China. I realize that this Society is not concerned with politics in the conventional meaning of that term. I hope, however, that I may be forgiven, Mr. Chairman, for using the word with a meaning that has a global rather than a Platonic significance.

It can hardly be in the best interests of the community of nations if the largest amongst them, shortly to be equal in population to all the rest put together, is to be allowed, even encouraged, to take a great stride forward, not on its own but in forced partnership with its mighty neighbour, whose culture, tradition, outlook, language and abilities are all in so many ways different, and even inferior, to its own. Against a background of materialism, these contrasts are nowhere more apparent than in the field of craftsmanship, where Russia decrees that skill of hand and eye are bourgeois, and therefore by implication bad (whilst size is what matters most), and China—true to the traditions of T'ang and Sung and Ming—is making immense efforts to encourage and help the small artisan, for whom design and precision are and have always been of consuming interest.

In China the small workshop is still pre-eminent. The present régime encourages small enterprise, in that it urges a communalization of the individual craftsmen who ply a common craft. The Government will help a small group of woodworkers, for example, to buy a wood-turning lathe, to be shared between them, even though it will not help them individually. It is said that half the industrial population of China work in small groups of this kind or as individuals, and are allowed to retain a part or the whole of the proceeds of their work; this is a conception wholly different to that of Communism in Russia. The development is, however, logical if the standard of output and of living is to be raised. Some of its manifestations, for example 'back-yard blast-furnaces', are clearly wide of the mark and ill-conceived. Amongst a nation of craftsmen, however, co-operative workmanship in small sheds and shops, especially amongst those who make finished goods ready for retail sale, does appear to represent a development that is both sound and shrewd.

A curious concomitant of this development is the fact that ordinary members of the Chinese public, the new proletariat which is in many respects so very old, may invest their money through the Bank of China in State securities, and earn 5 per cent interest per annum by so doing. Overseas Chinese, members of that world-wide international Community of some 30 million people, are encouraged to return to China, and to invest their money in State securities at 8 per cent;

elaborate arrangements for their reception are made, particularly in Canton, with special facilities for building houses in the style to which they have been accustomed. So far, after several years, barely 200,000 are said to have agreed to come back in this way.

These small activities, though widespread, do not present a major market for western goods and are not at present in a position to export substantially to the West. They, and the new industries being built in many centres, are concerned to satisfy the demand in China itself. The export of manufactured goods is limited, but in price they can compete with the Japanese, because the Chinese are more numerous and because their economy is based on a vast low-cost agricultural background. At the present time bicycles manufactured in China are being exported to Malaya and sold there at a third of the price at which they sell in Peking shops. China is manufacturing excellent ball-point pens, vacuum flasks, confectionery, tinned goods and toys, many of which she is exporting, especially to eastern markets.

This aspect of the great leap forward is made possible by the supply of machinery and equipment from the Soviet Union, Eastern Germany, Poland and Czechoslovakia. These machines are often out-of-date, but they are machines; they are often expensive, but they are supplied on apparently easy terms of payment which bear the hall-mark of political Communism at its most ruthless. But they are the 'machines' that are wanted for the great development that has gripped the whole country in its toils, and they are (for political reasons) available from no other source. Many of them are undoubtedly used as prototypes for imitation, to the great annoyance of their suppliers, whom the Chinese cynically call 'our friends in the West'. All of them provide that grist for the propaganda mill, which enables Russia to say, inside her country and outside it, that only the Union of Soviet Socialist Republics, and its allies, are prepared to help the Chinese in their struggle for nationhood.

The possibilities of trade between this country and the land behind the Bamboo Curtain are in other words immense, for reasons of tradition no less than because of the complementary nature of our economies. This trade is, however, stifled, on the one hand certainly because the Chinese put innumerable difficulties in its way, on the other because the spark of western initiative has not yet thrown light and hope into the dim corridors of political prejudice. A quarter of Chinese imports are said by Chinese authorities to come from suppliers within the Socialist orbit; the true figure is probably higher than this, because Communist import and export statistics can always be manipulated up or down by recourse to internal and unofficial rates of exchange. It seems probable that China would always prefer to appear less dependent on the Iron Curtain countries than she is, whilst the U.S.S.R. would wish to present the opposite picture.

At this point I am led on to the fourth and last of the four topics that I believe to be worthy of discussion, the immensity of the scope that trade with Communist China appears to offer, but which it has hitherto signally failed to achieve. There is abundant evidence that China wishes to advance faster than she is now

doing, but cannot, perhaps partially because of the inefficiency of her communications, and partly because of the vast poverty of the mass of her people. The loss of her traditional exports, and her failure to replace them with others, make her a doubtful trade partner. On the other hand, in her trade with Hong Kong China has a substantial annual balance in her favour, her exports to Hong Kong being approximately twice as high as those to the United Kingdom. China's surplus on her post-Korean trade with Hong Kong has indeed been of the order of £50 million a year.

If we accept the difficulties, is there virtue in seeking new openings for trade, and particularly trade in terms of capital goods, along *unorthodox* channels? As a trading nation we cannot afford to close our minds to the needs of China, which spring fundamentally from the facts of her population problems, and from the poverty of her people. Many of her great natural resources, of minerals and even oil, to whose exploitation she looks forward with all the confidence of political autocracy, lie at present beyond the reach of transport and even of manpower, though the latter is possibly a lesser difficulty than the former. The official description of her known mineral wealth, in the Handbook on People's China, published in Peking in 1957, bears witness to the vastness of her resources, and (by omission) to the problems of exploiting them:

Some 75 per cent. of China's coal lies in north and north-east China. Two coalfields in Chinghai and Sinkiang contain coking coal, estimated at more than 1,000 million tons each. Vast reserves of lead, zinc, tin, copper, antimony, tungsten and other non-ferrous metals are located on both edges of the Nanling Mountains in south China, and on the Yunnan-Kweichow Plateau. Rich finds of non-ferrous metals and petroleum have also been made in the northwest. Exploitation of the great oilfields recently discovered at Karamai in Sinkiang and in the Tsaidam Basin in Chinghai is actively in progress.

Most of the places mentioned in this quotation are situated between 1,000 and 2,000 miles, as the crow flies, from Peking, often over impossible terrain, across most of which no adequate communications exist by wheel or water. Although a major producer of tungsten, molybdenum and tin, there is little geological evidence that China's resources of iron are adequate for her projected needs. Even such resources as these, if brought within reach of consuming industry, are, however, incomplete, and not sufficient to make an industrialized China independent of imports.

If we accept the position that the policies of the West have been driving the People's Republic of China into the arms of the Union of Soviet Socialist Republics, an embrace which she does not particularly appear to cherish, then there may be reason for suggesting that, in the interests of the world's future, John Bull, or Uncle Sam, or Western Europe, or any or all of them together, might offer China, perhaps by loan or by lease, something less charged with hypocrisy than the economic hug of the Bear (or the threat of nuclear destruction).

Is it too much to suggest that an offer by the West to undertake some major project of lasting significance to China and her peaceful development might, because the Chinese are practical people, have profound results on the future

attitude of China to both Russia and the West? Russian propaganda instils continuously in the Chinese mind that only Russia stands by China in her need, that Russia assisted with the construction of 120 major engineering projects during the first Chinese Five Year Plan and is now helping on a similar scale in the second Five Year Plan which started in 1958. The antithesis of this form of propaganda is that the United States and the West have responded only with the strategic embargo and 'blockade'.

The tremendous present and future harm, to the well-being of the human race on earth, that the present situation is likely to occasion, cannot be assessed. To counter it the words of diplomats and politicians can hardly be enough; the practical achievements of the engineer, the technician, the scientist, and even the trader, are likely to do more.

If the West were to offer to undertake, over the next twenty years, the provision of the designs and the equipment for the correction of the Yangtze-Kiang, with its locks, barrages, hydro-electric schemes and measures for flood-prevention, the Government of China could hardly refuse. A mighty but peaceful blow would be struck at the roots of the assumed Soviet technical hegemony; a propaganda weapon of lasting importance would have been forged; the sum total of human misery on this earth would come to be progressively lessened. At the present moment every Chinese is consumed with pride that the new bridge across the Yangtze—the first to link the two halves of China—has just been opened, for road and rail, at Wu-han (the triple city on the great river, where Hanyang, Wuchang and Hankow meet). Every newspaper, every leaflet, features this bridge as the current greatest achievement of Soviet and Chinese technology. It is by no means the greatest bridge in the world, in length or size or difficulty or cost, but to the Chinese it is a triumph of Communism and the only large bridge in the world. The offer by the West to control the Yangtze river, or perhaps the Hwang-ho—China's Sorrow—would by its sheer magnitude strike home with tremendous impact, in a language that all could understand. Its significance would be far greater than that of the High Dam at Asswan, where Russia is playing the opposite game, against the West.

It has been my intention to convey, through the medium of this paper, that a realistic assessment of New China and its potential is a matter of real moment to Britain and to the West. Realistic assessment must be followed by imaginative action, action in which perhaps the flame of unorthodoxy can be seen to burn with a virgin brightness. It is manifest that the conventional approach is suspect. Russian achievement is valued more highly than western words; with the oldest continuous major civilization in the world behind them, the Chinese are not interested in European culture as such. Deeds at present are more potent than words. The channels of trade have the overwhelming advantage over all other forms of communication in that they leave something tangible behind them.

It is not realistic to consider the problem of trade with China without taking into account the position, the prejudices, and possibly the fears, of Russia. It is more than likely that the rulers in the Kremlin would give more than the souls they have not got to know what is hatching in the mysterious and ancient mind

of the Chinese Dragon. This fact, and I believe it to be a fact, can (or could) be used to our advantage as traders, rather than the reverse.

Lest it be thought that, in ignorance and inexperience, I have sought to oversimplify the problems at stake, and to underestimate the depths of the Chinese mind, may I close with three quotations of Chinese origin, which seem to me to be significant? Two-and-a-half millennia ago, Lao-Tsze wrote:

The journey of a thousand miles begins with one step.

Then, in the words of that other great philosopher a century later, Confucius, whose teachings to-day—like Taoism—are strongly condemned by the Communists (who nevertheless tolerate Buddhism, Islam and Christianity in their midst) we find:

An oppressive government is more to be feared than a tiger.

The Communists themselves, finally, underline the inferiority of their own thinking, and the muddled dialectics of their present dogma, by publishing this English translation of their National Anthem, known as the 'March of the Volunteers'. It alludes to the Great Wall, the greatest single structure made by man on earth, 1,684 miles long, and built between the fifth and third centuries B.C., and now being faithfully restored by the Communists. I conclude, Mr. Chairman, with this anthem, because its rabid words seem to sum up fitly what happens when a great people is seized by an alien philosophy. It runs:

Arise, all ye who refuse to be slaves!
With our flesh and blood
Let us build our new Great Wall
The Chinese nation faces its greatest danger,
From each one the urgent call for action comes forth:
Arise! Arise! Arise!
Millions with but one heart,
Braving the enemy's fire, march on!
Braving the enemy's fire, march on!
March on! March on! On!

DISCUSSION

THE CHAIRMAN: There are two comments that I should like to make. I think I understood you correctly, Lord Verulam, when you said there is no question of the new China not marching forward? With that I would entirely agree, and I would add that in my opinion there is no question of the new China not remaining. The other thing that Lord Verulam touched on was the sense of tradition in China, and that leads me to this speculation. In the passage of years, will that sense of tradition among the Chinese become stronger than their present feeling for Communism?

Lord Verulam drew attention to the fact that the volume of trade between China and Hong Kong was about double that between China and the United Kingdom. I think that can be explained in two ways. First, China very largely feeds the three million people in Hong Kong; second, there is a lot of transhipment trade that goes through Hong Kong. It goes from China to Hong Kong, where it is put into the Hong Kong warehouses and then subsequently transhipped on to the United Kingdom, and the reverse process also happens. That trade appears in the Hong Kong statistics as China trade, and in the United Kingdom statistics as Hong Kong trade, not China trade. That might be part of the explanation.

BRIGADIER J. L. P. MACNAIR: I spent two or three years in the Far East, based in Hong Kong, and I quite agree with Lord Verulam about the attractive nature of the Chinese character.

There is a certain aspect of Chinese trade which I think we do not recognize enough here. I remember taking a journey in a Chinese ship up the West River to a little place called Kong Moon. At that time there was an import tax on salt; everybody knew about it, and as the ship approached Kong Moon it began to slow down. On the opposite side of the wharves appeared a number of Chinese sampans. The salt was unloaded from the ship and carefully packed into the sampans and then the ship went on to discharge its lawful cargo on the wharves at Kong Moon. Everybody knew about it, but it took place out of sight of the Customs, so nobody worried; and I am pretty sure that an attitude of that sort still exists in Chinese trade. Now if we are going to do any Chinese trade—and obviously all the merchant houses in Hong Kong and elsewhere are very anxious to get into China—surely we must first clear up the political situation. A China not admitted to the League of Nations, continually incensed by the question of the off-shore islands, retaliates by various means, including sometimes locking up people who go too far into China. Therefore one cannot do very much in the way of trade negotiations. Is it not a fact, Sir, that the first steps, before any real trade can be done, must be political ones?

THE LECTURER: Yes, I think there is no doubt that what you say is correct—so far, at least, as one who (like myself) has not lived for three years in China can judge. The official propaganda in regard to the off-shore islands was at its full height in Peking when I was there, and also in Canton. Every Chinese one spoke to was enraged by the alleged iniquity of the United States in regard to these islands. No one could explain why the islands were important other than for reasons of prestige, and no one seemed particularly anxious to mention Formosa, though political hatred towards Chiang Kai-Shek and his people was as rabid as political hatred towards the United States of America. I have the impression that the British are regarded as having done more than most towards the solution of these political problems in that we recognize Communist China. We have a chargé d'affaires in Peking and the Americans have not. I think that most of the next steps in finding a political solution to this problem have got to be taken by our cousins in America, and it may well be that we are in a better position than anybody else to advise them.

MR. S. C. WILLIAMSON: I should like to ask Lord Verulam which he thinks is the best course: to try and work with the trading organizations direct or to appoint agents in Hong Kong? You cannot do both.

THE LECTURER: I am quite certain that one must work with the trading organizations in Peking. Many of them have branch houses in Canton, Shanghai and Tientsin, but the head office is in Peking; I think one must work through and with them, and that means through and with their European office in Berne, Switzerland. Hong Kong is suspect in Peking, but not nearly as suspect as either Formosa or Macao, the Portuguese Colony. I asked this question in various veiled forms of the two trading organizations with whom I was in contact in Peking, and in each case the reply was that those who wish to trade with Communist China must come themselves direct to Peking, having got permission to do so from Berne and having got a visa from the office of the chargé d'affaires in Portland Place; they must not send agents or deal through agents, because agents get a commission and therefore agents appear to the Chinese to be immoral, corrupt and expensive.

LI NEI-CHONG (China Trading Company): I am a merchant resident in London. There are several small points which I should like to make. Firstly, Lord Verulam has been extremely modest: very much of what he said is absolutely true, and much

as if he were an expert and knew a great deal about my country. Another point is perhaps of interest to traders in this country. I was in China for three months, in Peking, Shanghai, my own city of Canton, and in other cities, and I left in January, 1958. It struck me that the possibilities for trade between Great Britain and China are very considerable, but in fact, as Lord Verulam mentioned, and as most of you know, the amount of trade has been extremely small. When I spoke to officials of the various corporations in China I discovered that while the head offices of all the corporations are situated in Peking, there was a surprising degree of, shall we say, autonomy in the branch corporations. When I spoke to people in Shanghai, Canton and elsewhere I discovered that on some matters they would make spot decisions.

One question asked this afternoon by a member of the audience was: how should merchants deal with the Chinese corporations—through Hong Kong or, say, Macao or Formosa? Of course, Formosa and Macao are absolutely out. One must, first of all have contact with the interested corporation, whether it is in Shanghai, Peking, Tientsin or elsewhere. One must have contact, too, with the Head Office in Peking. Before attempting to trade with China, the importer and exporter in this country should try to establish some kind of sound working basis with Peking and/or the branch corporations in the several great cities. When he has done that, my suggestion would be for him to go to Portland Place and present his correspondence with China; and I do not think that, if there is some likelihood of some substantial business being done, he will have much difficulty getting a visa.

China undoubtedly wants to buy far more than she is buying at the present time from the United Kingdom, but of course when I asked the officials in the various corporations why they did not buy more, the stock answer was, the strategic embargo list. And then what followed was, 'We don't care. If the British will not supply us with these things we will make them.'

If British manufacturers and exporters interested in the Chinese trade could really get together with some of your British importers, I am sure means could be found fairly quickly for trebling or even quadrupling the present insignificant volume of Anglo-Chinese trade. Your importers are perhaps not enterprising enough. Anyway, that is my experience. If they were, I believe they could benefit very much by not limiting themselves to buying the so-called traditional Chinese exports. Naturally, the greater the imports from China, the greater could be the export of British goods to China. In many ways our needs are complementary. And this kind of two-way trade would surely be of immense value to our two countries.

One final point. As a Chinese who had been abroad for quite a few years, I went back to my country with some degree of apprehension. Being an old-fashioned Confucianist and Taoist (and partly Buddhist) I said to myself, what about our old traditions? I found that the old traditions existed and have become strengthened, and that the Marxist philosophy has things of importance which can be assimilated by our ancient traditions.

THE LECTURER: Thank you. I can only reply briefly to your kind words. First, as to the veracity of my statements—I am flattered that you consider them to be tolerably correct. Secondly, in so far as these purchasing and selling corporations are concerned, I think I must accept your restrictions on my previous reply. I was primarily concerned with the sale of what are essentially raw materials to two corporations, and I was told that to deal with Peking with due recognition from Berne was essential. But I was also told by others of several nationalities whom I met in China—Swedes, French and West Germans in particular—that for the export of Chinese products and for the sale in particular of machinery such as tractors and textile plant, it is every bit as appropriate to deal with the branch offices in Canton, Shanghai and Tientsin so long as one has made one's name first, as you have said, Sir, in Peking. Lastly, as you and the Chairman remarked, the great

problem of the moment and indeed of the future is how far the Marxist, Leninist, Stalinist philosophy is going to be accepted wholly by China. As a mere stranger to that country, and without your command of the language, I gathered the impression that China was not going to swallow Marxism whole, but was already, in the few short years that have elapsed since 1949, setting about modifying it to her own uses and, up to a point, taking the best out of it—if there are such components in it as can be called 'the best'.

THE CHAIRMAN: I move a vote of thanks to Lord Verulam for his most interesting and very lucid and informative lecture. Even those of us who have either been in China for some time or known a good deal about it in the past have, I think, learnt much from Lord Verulam's talk—and I should like incidentally also to congratulate him on the excellence of his photography. If ever he is out of a job I am quite certain he could set up as a photographer.

The vote of thanks to the Lecturer was carried with acclamation.

SIR HILARY BLOOD, G.B.E., K.C.M.G. (a Member of Council of the Society): It is my pleasant duty to propose a hearty vote of thanks to our Chairman. Sir Alexander, as you know, lived for ten years in Hong Kong right alongside this Bamboo curtain. He has had chances of looking behind it and of getting news from behind it which have been denied to most of us here—ten exciting years which I envy him, for they must have been packed with interest, packed with excitement and they were certainly spent in a place packed with people. They are years of which he can be proud and years of which we also can be proud. You may say that because your chairman and I belong, so to speak, to the same Trade Union, what I say about him is prejudiced. But such a suggestion could at once be disproved by quoting from the highest authority, that of the Vice-President of the United States of America. When he addressed the English-Speaking Union in London last year, Vice-President Nixon had some very complimentary things to say generally about British Colonial administrators, but he went on to specify, and one of the things he said was, 'You can be very proud of the contribution which was made by Grantham of Hong Kong'.

The vote of thanks to the Chairman was carried with acclamation, and the meeting then ended.

THE DEVELOPMENT OF THE PORT OF LONDON

A paper by

SIR LESLIE FORD, O.B.E.,

*General Manager, Port of London Authority, read to the
Society on Wednesday, 27th May, 1959, with John Hay,
M.P., Parliamentary Secretary, Ministry of Transport
and Civil Aviation, in the Chair*

THE CHAIRMAN: Sir Leslie Ford has a long record of service in the field of transport, like his father before him, who was, I believe, Chief Goods Manager of the old Great Western Railway. Sir Leslie received his basic training in that company and later was stationed in various South Wales ports, becoming Chief Docks Manager of the Company in 1944. His service was interrupted for four years in the First World War and his interest in military matters continued during the Second World War. To-day he is Colonel of the Engineer and Railway Staff Corps of the Royal Engineers, Territorial Army.

In 1948 Sir Leslie was appointed General Manager of the Port of London Authority, and since that time he has paid particular attention to the rehabilitation of the Port following severe damage received during the last war. He has also given a lead by taking advantage of mechanization in the operation of the Port. Just over a fortnight ago he was honoured to assist in showing your Patron, the Queen, and your President, the Duke of Edinburgh, round the Port of London. Her Majesty's visit was to mark the Golden Jubilee of the Port of London Authority. I will not mention now Sir Leslie's many activities, or the numerous committees on which he serves, but I should like to take this opportunity of saying that we in the Ministry of Transport are very glad to have happy relations with the Authority, and of acknowledging the help that Sir Leslie is always willing to extend to us in tackling matters of concern to ports generally.

The following paper, which was illustrated with a film, was then read.

THE PAPER

The Port of London Authority is fifty years old this year but administers a port which began to come into existence nearly 2,000 years ago. In order to appreciate the scope of the Authority's functions and responsibilities it is necessary to know something of the steps that led to the establishment of the port on the River Thames.

The river itself has been in existence for a million years—a mere episode in geological time—but long enough for it to be regarded as the fixed element in the situation. Accordingly, for my discourse I invoke the spirit of the Thames in the manner and in the words of the poet, Sir John Denham:

O, could I flow like thee, and make thy stream
My great example, as it is my theme!

The advantages the Thames enjoys as a great navigable river are due to its

physical setting in the elongated saucer of chalk and clay forming the London Basin. The Cretaceous chalk overlaid by a 400-feet-thick blanket of Eocene clay and sundry gravels emerged from the sea thirty million years ago. Repercussions of the earth foldings which produced the Alps during the Miocene period resulted in the formation of the downfold of the London Basin, a process completed by the beginning of the Pleistocene period (i.e., the last period in geological time), a million years ago.

Through the V-shaped trough, gently pitching towards the North Sea, a large river, the forerunner of the Thames, flowed eastward to join the waters of a still larger river, now represented by the Rhine. Thereafter great glaciers of the Ice Ages thrust down from the fastnesses of Scandinavia as far as this river and spewed forth vast quantities of debris and meltwater, pushing it right over to the south side of the Basin hard up against the chalk rim. The river in its new course began to cut its way downward into the soft strata and, as sea level fell, left three terraces before it found its fourth and present bed. Then the tilting of south-eastern England, which is still continuing, converted the Thames into a river drowned by the sea and opposed twice daily by the tide.

These are the structural elements which brought into being the long great street of water now crowded with the traffic of ships of many nations and penetrating deeply into England—in early history a water-gateway from the Continent, but in our times a water-gateway for the ships of the Seven Seas.

Early man appeared in the Thames Valley half a million years ago, but only a few paltry chipped flints survive as evidence of his existence at that stage. However, the Thames can proudly show the 300,000-year-old skull of its earliest known inhabitant—a female who died in her early 20s—found on the 100-ft. Boyne Hill terrace at Swanscombe in 1935. The earliest immigrants came from Asia Minor or the Mediterranean, either by the south-east route through the Rhineland or south-west by way of Spain and Brittany. At first the great channel river (now the English Channel) was the only obstacle, but the land slowly submerged until, about 8,000 B.C., the link with the Continent was finally severed. The finding of a microlithic spearhead on a shoal patch in the North Sea seems to indicate that newcomers were able to cross on the submerging land, hunting and fishing on the way.

The Stone Age yielded to the Bronze, and a main traffic route originating in the trade for Irish gold and copper developed from Anglesey to a ford at the head of the Thames Estuary and thence to the Continent. With the increase of the population and its unification into powerful tribes the trackways multiplied, converging on the Thames from all points of the compass and forming the pattern of the Roman roads, later to become the road system of this country radiating from London.

At this stage of development an examination of the position of London shows that already the ideal conditions for the establishment of a port were present. A considerable tidal inlet gave access to the heart of the country and to an arc of tributary land. The kinetic tidal energy was maintained towards the head of the estuary, 60 miles inland, and provided sufficient depth to enable vessels to

reach, in one tide, a point where the channel approached firm land for the unloading of cargoes and which was also the focus of the road system; in fact, a natural transhipment point for sea-borne and land-borne traffic. On the Thames there was one place, and only one, at which a hard gravel subsoil was present simultaneously on both banks. At Southwark a broad tongue of gravel projected to within half a mile of the twin hills now crowned by St. Paul's Cathedral and Leadenhall Market, and this was sufficient to provide the hard metalled surface desirable for a permanent crossing and for wharfage.

There is no archaeological or historical evidence of a Celtic settlement on the site of London, and if a settlement existed it must have been negligible. The Romans founded the City after the invasion of A.D. 43, and it is accepted that they built a wooden bridge. Around the bridge, the city and the port developed with extreme rapidity, for the classical historian Tacitus, in his account of the revolt of Boadicea in A.D. 61, describes London as 'a place not indeed distinguished by the title of "colony" but crowded with traders and a great centre of commerce'. The city was burned to the ground and many thousands of its inhabitants massacred. After the rising the city was rebuilt and became the seat of central government, supplanting Colchester.

It is recorded that Agricola, the Consul of Britain, 'sounded the estuaries'. This early reference to hydrography is an indication of encouragement of foreign shipping traffic by the Roman administration.

Strabo, a Greek geographer of the early Christian era, tells us that corn was grown in Britain and that, together with cattle, skins, gold, silver, lead and iron, it was exported to the Continent—also hunting dogs and gangs of chained Britons impressed as slaves or soldiers. Elsewhere it is recorded that the exports of corn to Germany in the year A.D. 359 amounted to 800 shiploads. The trade of the port was protected from marauders by the Count of the Saxon Shore with a fleet, a legion and a series of ten East Coast forts. London received the title of *Augusta* as a principal Roman city, but such prosperity was not to continue. The Roman Empire was so assailed on all sides that Britain was steadily deprived of its defences, until in A.D. 410 the Roman occupation was brought to an end by the withdrawal of the last legions for the defence of Rome.

Scisor attacks of ravaging Angles, Saxons and Jutes, and of barbarian Picts and Scots, were immediately renewed. London survived—an island in a flood of violence. The Saxon newcomers made for Wessex, intent on settlement, bypassing London, of which nothing more is heard until A.D. 604, when the Venerable Bede, referring to the East Saxons, records that 'Their metropolis is the City of London which is situated on the banks of the aforesaid river, and is the mart of many nations resorting to it by sea and land'.

The seventh and eighth centuries (A.D. 613-829) were occupied by the long struggle for supremacy waged between the three great Anglo-Saxon kingdoms (Northumbria, Mercia and Wessex) which ended in their unification. Thus was founded the English race and nation, with its own distinctive language and national and local forms of government in the Witan and the moot.

The end of the struggle was marked by the incursion of the pagan Vikings.

There was 'great slaughter in London' in 839; it was taken by storm in 851 and repaired by King Alfred to become the heart of English resistance. An attack by the Danes on London in 895 was frustrated by King Alfred, who dammed up the River Lea, whereupon the invaders abandoned their vessels and retired overland to the Severn, leaving London in peace for nearly a century. Owing to the weakness of Ethelred, London again became the coveted prize, but in 979 it withstood assault after assault by Sweyn. The rest of the kingdom fell, leaving London no option but to follow suit. Ethelred fled to Flanders but, obtaining the assistance of Olaf of Norway, regained London by the famous attack on London Bridge recorded in the *Heimskringla Saga*, pulling down the bridge piers despite the barrage of great stones rained on his ships.

Canute, son and successor of Sweyn, subdued the whole country in 1016, and London, isolated, once again was compelled to submit. The relative position of the City in the Anglo-Danish kingdom is demonstrated by the Danegeld payment, for London's proportion was £10,500 out of a total for England of £72,000. Already King of Denmark and Norway, Canute chose England for his home and London for his capital during his peaceful twenty-year reign. Stimulated by the King's commercial interests in Scandinavia, sea-borne trade expanded greatly when the ports on both sides were open to mutual exchange, and vessels, released from warlike purposes, were soon arriving at the two existing London hithes (artificial inlets with the sides supported by timbers to prevent them slipping into the river). Queenhithe (just above London Bridge) had been established in 899 by Charter of King Alfred and Billingsgate (just below London Bridge) was functioning even earlier, and was the subject of a law of Ethelred II in the year 978 respecting the payment of tolls and customs by vessels arriving there. The Easterlings from Cologne, who had blood ties with our own Saxon stock, are known to have been settled here long before that year. They are mentioned in the ordinance.

By the time of the Norman Conquest London regained the position she had first acquired under the Romans as the chief emporium of North European commerce. William the Conqueror's greeting to Londoners was addressed to Godfrey the Portreeve and to 'all the burghers within London French and English friendly', and shows the international character of its trade.

The trading community was soon expanded by the arrival of Flemish artisans, compatriots of William's Queen, Matilda, and merchants from Normandy, Italy and Spain who came to live in London because it 'was fitted for their trading and better stored with merchandise in which they were wont to traffic'.

The Easterlings developed into the Hanseatic League and obtained such extensive privileges and protection that the Hanse merchants gradually absorbed the control of the greater part of London's foreign trade. The League had its Guildhall at the Steelyard, on the site of the present Cannon Street Railway Station, and dominated the commerce of London from this walled enclave until expelled from the country by Queen Elizabeth in 1597. It is interesting to note that some German merchants were still in occupation in 1853, when the Victoria Dock Company became the last occupiers of a warehouse, on the site

of the old Steelyard, using it as an up-town warehouse for ten years before it was demolished in 1863.

King Richard I in 1197 gave certain royal conservancy rights in the bed and foreshore of the Thames to the City of London in return for funds for the Crusades. Gradually the conservancy of the Thames passed entirely to the City of London. The administration was not directly conferred, but the City in actual fact exercised the jurisdiction of a Port Authority long enough to gain a prescriptive right which only terminated in 1857.

The building of London Bridge in stone commenced in 1176, taking 33 years to complete, a drawbridge being provided for vessels to get through to Queenhithe without dismasting. For this service 'pontage' was charged.

Below the bridge, far eastward, the sea-walls of the Thames were coming into existence piecemeal in the eleventh and twelfth centuries, doubtless by the action of riparian owners, nobles, monasteries and farmers reclaiming the low-lying alluvial marshes fronting their land. Working for their own purposes, the builders at the same time performed a mighty service, providing London with one of its greatest assets as a port. The narrowing of the channel of the Thames into its true flood-plain gave the river the depth and tidal energy to carry large merchant vessels as far as London Bridge until modern dredging was introduced.

Landing and wharfage dues first came into existence in the reign of Henry III in 1236. The increase of foreign trade made irksome and inconvenient the current practice of buying goods on board vessels moored in midstream. Accordingly dues were instituted for ships to come to the 'hithe', and for the goods to be disposed of ashore. Shortly afterwards the City purchased Queenhithe which, with Billingsgate, still remained the only place available in the Port for the direct landing of goods.

In the Middle Ages wool, cloth, hides and wax seem to have been our principal exports, the chief imports being wine, silks and fine goods.

Edward I (1272-1307) granted the merchants of Bordeaux a Charter and built houses with cellars in the place to this day called 'The Vintry', in 1303 extending these privileges to all foreign merchants. It was doubtless such a document as this that he would have sealed with his personal seal for the Port which bears the legend, 'The Seal of our Lord Edward, King of England, in the Port of London'. An impression of the seal is in the possession of the Authority.

Sea coal coming into London coastwise is mentioned for the first time in 1306, when it was taxed by Edward I to defray the cost of repairs to London Bridge. To-day nearly 18 million tons of sea coal arrive each year in the Thames.

The London of Edward II (1307-27) contributed five times more men for a general conscription than any other city, from which it may be concluded that its relative wealth and influence had risen to a high level.

Exports of wool were on such a scale that the whole of the Flemish cloth industry and a good part of that of Tuscany depended on English wool. Banning of the export of wool by the passing of Special Acts following Edward III's accession to the throne caused widespread unemployment and starvation. The weavers in the Low Countries roamed the land begging for bread. As the

exports of wool decreased, so the exports of woollen cloth increased, because it was a better economic proposition to export the manufactured cloth. Edward III invited Flemish weavers to come to England and thereby laid the foundation of the present woollen export trade.

Wool formed the cargo of a vessel named the *Little Edward* which went aground at low water near Margate in 1315, *en route* for Antwerp. She was attacked, seized and taken to Calais by the French, compensation of £1,200 being claimed for the cargo of wool, consisting of 120 sarplars at £10 per sarplar ($\frac{1}{2}$ sack). The *Little Edward* herself was valued at £40. She is the first trading vessel of the port of which we appear to have an account by name.

London's increased concentration of shipping and progress as a shipbuilding centre is seen in the reign of Edward III, when merchant vessels were potential ships for war. He first prepared and manned a fleet from London in 1337 to support his claim to the throne of France. Another fleet despatched from the Thames was the instrument of his decisive naval victory at Sluys in 1340, and again in 1346 the largest fleet which had so far quitted England was fitted out at Rotherhithe to bear to France the archers who fought with such distinction at Crecy. Shipbuilding continued on Thames-side through the centuries, producing famous ships like the *Harry Grace à Dieu* at Woolwich in 1488 and the ironclad battleship *Thunderer* at Blackwall in 1911, but finally was forced from the Thames by the substitution of steel for timber.

Coming to the fifteenth century: the great variety of choice fruits made available in London by the increased trade with Italy and the Levant is recorded in the poem by John Lydgate describing the Grocers' Company's exhibit in the pageant for Henry VI upon his return in 1432 from being crowned King of France. There were

Orengis, almondis and the pome-garnade,
Lymons, datez ther colors fresshe and glade,
Pepyns, quynces . . . peachis, costards and the pome-cedre,
'Eke the Fruitis which more comon be,
And other manye ful faire and fresh to se.

Chaucer had shown earlier the Englishman's love of travel. In 1428 the King granted permits for 63 cargoes of pilgrims consisting of 3,000 persons to visit the shrine of St. James of Compostella and, like modern sea cruising, the pilgrimage became the fashion. Vessels were specially fitted out to carry the pilgrims, with the money necessary for their charges and devotional offerings. Two vessels sailed from London, with cargoes of 80 and 60 persons each, in 1434. The trade became profitable enough for new vessels to be constructed, capable of carrying 200 pilgrims.

The City, until now simply a conservancy authority, was granted a substantial share in the operational management of the port in the reign of Edward IV (1461-83). The right was obtained to weigh, measure and warehouse all wools brought to London, to pack woollen cloths, skins and all other goods, to examine all merchandise liable to Customs dues, to undertake porteraige between the Thames and the warehouses of foreign merchants, to garble all spices and

other merchandises (that is, to separate good from bad), to gauge wine and to carry wine between the port and the vintners' cellars. The performance of these operations was a source of revenue and a great step forward in promoting the entrepôt trade which has been the chief source of London's greatness and political and financial power.

The Tudor monarchs encouraged the upsurging spirit of enterprise abroad in England. Commerce in London for centuries had been dominated by foreigners who owned both ships and merchandise. By degrees the foreign trade passed into the hands of the Merchant Adventurers, an association of Englishmen who became shipowners as well as merchants. This was assisted by the Navigation Acts of Henry VII and his encouragement of commerce. The discovery of America in 1492 and of Newfoundland in 1497 was ultimately of commercial value to the port.

The long reign of Henry VIII (1509-47) was of negligible commercial interest, but at least he gave the Port of London the fortifications of Gravesend and Tilbury.

Queen Mary's (1553-8) contribution to the betterment of the port was the loss of Calais. The wool handled there for two centuries thereafter came to London for re-shipment, swelling the entrepôt trade.

John Stow, London's sixteenth-century historian, records this story of the Queen:

An alderman of London reasonably (as methought) affirmed, that although London received great nourishment by the residence of the prince, the repair of the parliament and the courts of justice, yet it stood principally by the advantage of the situation upon the river; for when, as on a time, it was told him by a courtier that Queen Mary, in her displeasure against London, had appointed to remove with the parliament and term to Oxford, this plain man demanded whether she meant also to divert the river Thames from London, or no? and when the gentleman had answered 'No'; 'Then', quoth the alderman, 'by God's grace, we shall do well enough at London whatsoever become of the term and parliament'.

Sir Hugh Willoughby and Richard Chancellor preceded by a few years a long line of Elizabethan seamen explorers. They sailed with three ships from Ratcliffe in 1553, following the phantom of the North-East Passage to China. Willoughby perished in the ice but Chancellor reached Archangel and went to Moscow, opening up trade which led to the formation of the Russian Company.

Queen Elizabeth's foreign policy was furthered by the expeditions of Frobisher, Gilbert, Hawkins, Drake, Raleigh, Lancaster and other famous seamen, all associated with the Thames, who sailed the far oceans, circumnavigated the globe and laid the foundation of the world commerce of the English-speaking people. Under the stimulus of promises of monopolies to those companies that should first open up communication with undiscovered countries, there came into existence in Elizabeth's reign the Turkey Company, the Africa Company, the East India Company, and other similar Merchant Companies. London was their home and the trade they established came to the port.

The collection of the Crown's customs revenue had become so unsatisfactory

that Elizabeth, in the first year of her reign (1558), enacted that all foreign goods were only to be discharged between sunrise and sunset at selected 'legal quays'. Twenty quays or wharves between London Bridge and the Tower, having a total length of 1,419 ft., were endowed with this privilege. In course of time this amount of wharfage became totally inadequate to cope with the increased trade of the Port of London and, to relieve congestion, 'sufferance wharves' with restricted privileges were introduced a century later.

In the reign of Queen Elizabeth, the first pair of silk stockings known in this country was imported from Spain and presented to Her Majesty by Sir Thomas Gresham, who founded the Royal Exchange in 1556.

London, at the close of the century, had become the financial and commercial centre of the world, largely due to the skilful financial policies of Gresham. The occupation of the Low Countries by the Spaniards disrupted trade there and the sack of Antwerp by the Duke of Parma in 1585 drove away its foreign shipping and finance for three centuries. The defeat of the Armada in 1588 and the expulsion of the Hanseatic merchants from the Steelyard in 1597 also helped London to supplant Antwerp.

The seventeenth century opened with the first voyage of the East India Company to the East Indies. Five ships sailed from Woolwich under Lancaster, returning two and a half years later with 1,030,000 pounds of pepper, not such a curious cargo for those days, and very valuable. The expedition for the settlement of Virginia set sail with three ships from Blackwall in 1606. In the port itself the shipping anchorages extended downstream as far as Ratcliffe, Deptford was a station for royal ships and the East India Company's ships anchored at Blackwall, the cargoes being transferred to the legal quays in the pool by the only covered barges in the port.

The Muscovy Company in Russia, the Eastland Company in the Baltic, the Merchant Adventurers to Flanders and France, the Levant Company to the Mediterranean, the Africa Company in West Africa and the new Hudson's Bay Company incorporated in 1670, naturally brought their produce to their home port and to the best market in existence—London.

In spite of the disruptive effects of the Civil War on trade, the highly convenient system of banking became established in London. The Plague year of 1665 dislocated trade by reason of the quarantine regulations, and the Great Fire of 1666 put the port in worse case by the destruction of practically the whole of the warehouse and wharfage accommodation. A scheme to straighten out the water-line between Temple Stairs and the Tower in a new Thames quay, with warehouses set back 40 feet from the quayside, was not achieved.

The Dutch wars largely prevented colliers reaching the river and brought the indignity of invasion to the Thames for the first time since the days of Canute. Two attacks were made in 1666, East Tilbury Church being beaten down and ships of the Royal Navy burned in the Medway. One of these ships was the *Loyal London*, the City's gift to the country. Alarm in the city was great, and the next year, another attack being expected, nine ships were sunk in the river at Woolwich and four at Blackwall as a measure of defence. Pepys made bitter

comment on the panic-stricken mismanagement which for this purpose sank ships loaded with merchandise, one with cargo valued at £80,000 and a King's ship filled with stores for the fleet.

The initiative and drive of a woman (Mrs. Elizabeth Howland, daughter of Sir Josiah Child, the banker and Chairman of the East India Company) brought about the building of the first real dock in the port, in fact in England, in 1696. This was the Howland Great Wet Dock at Rotherhithe, intended as a retreat for ships from the stresses of mooring in the tidal Thames. It was 10 acres in extent and 1,070 ft. long, but had no warehouses for the reception of merchandise. Its name was changed to Greenland Dock in 1763, by which time it had become the seat of the whaling industry. For over a century it was the sole dock in the port and was the nucleus from which the Surrey Commercial dock system developed.

The remarkable increase in the overseas trade of Britain during the eighteenth century was matched by expanding production at home, itself heightened by the discoveries ushering in the Industrial and Agrarian Revolutions. The commerce of the Port of London doubled from 1700 to 1770 and doubled again from 1770 to 1795. Sugar, rum, mahogany and coffee from the West Indies, tobacco from America, pepper, spices, indigo, raw silk, calico and fine goods from India were commodities showing the greatest increase. All this import traffic had to be dealt with at the wholly inadequate legal quays appointed by Queen Elizabeth in 1558.

The congestion of the ships was such that 1,775 vessels moored in space adapted for about 545 and the river was rendered almost useless as a highway. Some 3,500 craft were employed to convey cargoes to the legal quays, so crowded with imports that immediate discharge was impossible, and both ships and barges served as floating warehouses for weeks at a time instead of performing their transport functions. Precious imports were ruined by wet weather and the depredations of 1,200 professional thieves and an army of delinquent river workers. The annual losses amounted to £500,000. The port, choked with ships and suffocated under merchandise, was saved by the far-sighted decision to build enclosed docks. This gave security and the required extension of the quayage in a compact form away from the river.

The West India merchants, obtaining an Act in 1799, with great energy constructed within three years two parallel docks in the Isle of Dogs surrounded by a fortress-like wall and containing a range of massive warehouses.

The London Docks at Wapping followed in 1805 under a scheme sponsored by the City merchants, and the East India Company opened a dock at Blackwall in 1806. Each of these dock companies was given a monopoly for 21 years in respect of the cargoes of its respective trades. The success of these dock groups in relieving congestion and in safeguarding cargo inaugurated a new phase in the history of the port. Order was restored after chaos.

The expiration of the monopolies of the first dock companies encouraged the building of the St. Katharine Docks on the site of the Collegiate Church of St. Katharine-by-the-Tower by 1828. The Victoria Dock, built in 1855, was

subsequently purchased by the amalgamated London and St. Katharine Dock Companies, which thereupon built the adjacent Royal Albert Dock in 1880. Meanwhile the Millwall Dock had been built on the Isle of Dogs and opened in 1868, and on the south bank of the river, at Rotherhithe, the Surrey Commercial Docks were developed from 1807 to 1876. In 1886 the combined East and West India Docks Company opened the Tilbury Docks in Essex in a bid to capture the Far Eastern trade from the other dock companies.

Intense rate-cutting and capital costs reduced the financial strength of the dock companies until they could neither meet the ever-growing demands of users or maintain the existing fabric. The two large rival dock companies amalgamated as the London and India Docks in 1901, the Millwall Dock Company and the Surrey Commercial Docks Company remaining outside the combination. In the meantime the conservancy of the Thames, which had remained in the hands of the Corporation of London since the twelfth century, was handed over (in 1857) to a separate body, the Thames Conservancy.

The increased size and draught of ocean-going ships caused shipowners to demand a 30-ft. deep channel in the river, and the most urgent of the extensive work required in the docks was the provision of new entrances. The divided control of the port rendered the situation impossible of solution, and a Royal Commission in 1902 recommended the creation of a public trust to take over all the dock companies and the control of the tidal Thames. Despite this, agreement could not be reached and the years passed until the powerful driving force of Mr. Lloyd George and of Mr. Winston Churchill, as he then was, secured the passage of the Port of London Act 1908. This Act constituted the Port of London Authority and charged it with the duty of 'administering, preserving and improving the Port of London'.

The new Authority was faced with the immense task of rehabilitation and reconstruction. The first priority was given to making and maintaining a new dredged channel capable of affording safe navigation from the sea into all of the enclosed docks and to the river wharves and moorings up to the Pool of London. In succession there were massive requirements for improved entrances: quays, cranes, sheds, cold stores, floating cranes, pneumatic grain elevators and other equipment. A new dock system was completed and opened in 1921 and known as King George V Dock; 1930 saw the provision of a passenger landing stage, a new dock entrance and new dry dock at Tilbury.

The bold conception and vigorous execution of these and many other schemes have been hampered by a series of tragic world events, commencing with the First World War, followed by the economic depression in and after 1930, and latterly by the Second World War.

The part played by the port in the last war was of no mean order, and the damage sustained from aerial attack, mines, flying bombs and rockets was heavy. The story is not for telling here; it must be sufficient to say that the port was left with the task of replacing war damage assessed on a pre-war basis at £13,500,000, making good the lack of maintenance during the war, and then marching on in its progress to provide the facilities demanded by the new age

that comes at the end of every successive war. It was my privilege to be invited in 1948 to direct the post-war recovery.

The position in the port then was that one-third of the warehouse and transit sheds at the docks had been destroyed or seriously damaged. Equipment had been taken away for the use of the Services and the less threatened ports, shipping lines had been diverted elsewhere, trades disrupted, and there was control of labour, material and capital expenditure for reconstruction.

Nevertheless, all damaged berths and sheds have now been reinstated on modern lines and additional berths have been constructed at a cost of something over £30,000,000.

In addition, over £3,000,000 has been spent on the purchase of over 200 quay cranes and other mechanical handling equipment such as fork lift trucks. It is true to say that the overall efficiency of the port installations is greater now than ever before. No port administrator can afford, however, to pause in his work, for the tide of progress rises even faster, and so still further developments in the port have been planned for execution when the need arises to justify the expenditure. One particularly interesting development which only came into operation on 1st May of this year is the Thames Navigation Service, which provides a complete electronic system of navigation information based on radio-telephony and radar, and operates from a new building at Gravesend.

Since its inception in 1908 the Authority has incurred an expenditure on capital development schemes and maintenance works amounting to £100 million. During this same period the net registered tonnage of shipping has risen from 38 million to last year's record figure of 75 million, while last year the tonnage of goods reached the record figure of 55 million tons.

In conclusion, I should like to quote the words of a colleague who has recently written a series of articles for our House magazine. This is what he says:

But the spirit in which the Authority have carried out their task and ridden the storms of the last half-century constitutes a lesson far more rewarding than any tale of money and tons.

It is a tale of a bold experiment begun in an era when men had little reason to doubt the nation's security and prosperity, an era which abruptly ended five years later. It is a tale of a struggle to overcome perils and adversities which followed each other in almost monotonous succession. It is a plain tale of men working not for personal gain but for an ideal of service. For half a century successive members of the Board and a loyal staff imbued with the same spirit have made their contribution and then withdrawn—but the Port and the Authority move on through time.

The Thames is a river of great—and perhaps the greatest of—English traditions; and the yesterdays and the to-day of the Authority will take their place among the worthwhile traditions of tomorrow. We still live as much by ships as our forbears, and history will assess our era and our tides as being as bold and as colourful as ever.

DISCUSSION

THE CHAIRMAN: I should like to exercise a chairman's prerogative and begin the discussion. Sir Leslie's paper dealt largely with the history and development of the

Port of London. The film that we have just seen shows us something of the activities of the Port at the present day. Sir Leslie, would you care to give us any observations or comments upon the future of the Port of London—its future development over, say, the next twenty-five years?

THE LECTURER: I presume that Mr. Hay's question is prompted by the reference in my talk to the planning of still further developments. These plans fall under three main heads. There are a great number of major works of a purely engineering character: new power supplies, new plant, new equipment of every sort, and a lot of new construction. Then there are plans to cover schemes which our operating officers think highly desirable and essential if we are going to continue to deal with ships with efficiency and an even quicker turn-round. And then there are one or two schemes which I think come under the heading of major developments, and comprise an entirely new dock system, similar to that which the Authority built in 1921 and which is known as the King George V Dock.

To deal with the latter developments first: they involve very heavy capital expenditure, and my Board will need to be satisfied as to a sustained level of remunerative trade before we can start on either of the two major schemes, and I should not like to forecast when that is likely to take place. On the other hand, major improvements and the reconstruction of existing facilities will continue for so long as we can find fresh capital on reasonable terms. There is one development, however, that is very near to my heart and I am glad to have an opportunity of speaking about it. It is the making more and better use of what we have already got. It is staggering, sometimes, when one thinks of the amount of capital expenditure that is involved in a great port undertaking. We buy new items of equipment by the hundred; we spend millions of pounds on new cranes; and some of those cranes operate only for about fifty hours a week. I cannot imagine any other industry tying up capital in such a way. I am sorry to say that to-day, although we have spent over thirty million pounds since the war, and that sum covers a considerable number of modern warehouses and transit sheds, some of the working operations that go on inside those warehouses are the same as those that went on in the old buildings fifty years ago. There is a great reluctance on the part of labourers to accept the machine and the consequent redeployment of the labour force, which are inevitable if you are going to introduce modern methods. I am not thinking in terms of automation—I do not expect anything in a dock ever to be done by a push-button—I am talking about the intelligent introduction of a machine. If London is to retain its premier position as a port and is not to have the cream of its business taken away by the almost equally great ports on the north side of the Continent, then we have got to keep our charges reasonable. You can only keep your charges reasonable if operating costs are low. You can only keep your operating costs at a relatively low figure if everybody recognizes that, with the passing of years, methods must change, and that you cannot expect to have all the benefit of man's inventions unless you are prepared to accept the obligation to alter the structure and size of your labour force and redeploy it accordingly.

MR. A. POWIS BALE: I have used Tilbury many times, and to see on the film the many great improvements that have been made in the same space, and practically in the same conditions there, is quite astounding to me; because it has been a black spot in transport in the past. It shows the sort of thing that can be done in transport of other types; for instance, to relieve our parking problems. There is a lot of space not fully used.

THE LECTURER: I hope nobody will continue to regard Tilbury as a black spot. There has always been rather a fuss about Tilbury, because it is twenty-five miles away. Possibly in the days when one went down in a horse vehicle and collected

one's goods those twenty-five miles were a consideration, but I suggest that to-day, with the improved road facilities and the ability to by-pass some of the inevitable congestion which you normally come into going down to the Royal Docks, you can in fact get down to Tilbury as quickly as you can get to the Royal Docks, only ten miles away.

Tilbury was constructed primarily as a railway port and did in fact have very little in the way of road facilities, but since the war the road traffic arriving at Tilbury has increased by seven times, whereas the rail traffic has only gone up by some twenty-five per cent of the pre-war figure. Without going outside the present boundaries we have constructed over two miles of roadway; we have sacrificed certain railway lines and used the space to put roadways down; and we are dealing most effectively and without congestion with this very great increase in road traffic. So far as the new passenger terminal is concerned, it was built primarily as a general cargo shed, but it has been so designed as to make it quite agreeable to passengers. That was a new quay construction entirely, some 850 ft. long, and the whole job cost about a million and three-quarter pounds. Tilbury, because of the great amount of land which the Authority owns there, offers great possibilities for development in the near future, and without the necessity for promoting a Parliamentary Bill or for compulsory requisition of land. All that we require to be assured about is the need. Tilbury does offer that opportunity of providing a great number of additional berths for the largest ships that can come up the river.

COMMANDER S. A. NETTLE (Ministry of Transport and Civil Aviation): Sir Leslie mentioned that the P.L.A. has plans for improving and extending the port's docks, but that his Board would have to be satisfied that the coming increase of trade would warrant it. I should like to ask Sir Leslie whether that really would be the only factor, or whether the increasing traffic in the very much bigger ships would also be a factor to justify this development in other parts of the river? Perhaps it would be improper to ask him where these developments might be, but I am thinking particularly of the grain trade. Grain is arriving in larger and larger ships, and we know that in some of the docks where there are grain stations they cannot take larger ships, not because of their length, but because of their draught.

THE LECTURER: The speaker is obviously referring to the Royal Victoria Dock and a certain disability which at present exists at what is known as the Connaught Cutting. He may have noticed that the Connaught Cutting has been widened from 80 ft. to 100 ft., especially in order to deal with the new ships which are under construction. We should be only too glad if we could have the opportunity of deepening that particular dock, and there is a possibility that that may happen. The restriction through the Connaught Cutting is decided by the two tunnels of the British Transport Commission which run underneath and nearly down to Woolwich at Terminal Station. If we can persuade the British Transport Commission that it would be advisable to abandon the Woolwich Line and abandon those tunnels, then we would be free to deepen. But I am not quite so sure that I agree with the speaker that the tendency is for the smaller ship to go and to be replaced by the larger ship. The bigger ships are restricted by the places which they can trade to and from. If you look at the history of London, the first docks were built in 1802, and they were very shortly followed by the London and St. Katherine Dock in 1805. That is 155 years ago, and over so long a period one might have expected to see in London a great amount of abandoned dock estate. But the singular thing is that even if we are short of berths to-day, it is the smaller berths that we are short of and not the larger. The Authority has got to maintain a balance between the facilities it provides for the small ship, the medium-size ship and the very large ship.

There is no secret about where the other development is; it is on the north side of the Royal Albert Dock, where even in 1910 the Authority started buying land.

Now we own some hundreds of acres of land which have been planned and on which public inquiry has been held, but—to answer the Parliamentary Secretary's earlier question—I would have some hesitation in saying when that planning is going to take place, particularly as I appeared before the public inquiry.

MR. F. W. BRIDEN (Dock Official, Transport and General Workers' Union): Sir Leslie mentioned that the workpeople were reluctant to accept mechanization. Could I ask him what the Authority has to offer them in return for their co-operation in the mechanization of the docks?

THE LECTURER: The Authority is offering what any employer offers when he is prepared to put down a lot of capital for the purchase of machines: greatly improved conditions for his employees. If a man is given a machine which, in the words of the old railway company's advertisements, takes the lug out of luggage, and yet does not reduce his earnings, but in fact earns him a great deal more, then I should think the advantage was very much on his side.

I used the word 'reluctance' quite deliberately, because I do not want it to be interpreted as refusal to accept mechanization. It is a natural reluctance, it is reluctance I can understand, because, as I have said, if you introduce a machine you have got to have a redeployment of a labour force. To put it quite frankly, you will not need as many men, and I have always tried to advocate that the introduction of the machine must be spread over a very long time. If there is a long-term policy whereby machines are introduced, so reducing the number of men required to operate them compared with ordinary hand gear, there are various ways that take care of it. There is retirement, for example, and there is natural wastage. But it has got to be recognized that there is nothing mystic about a particular number of men always, for ever more, being employed in a particular industry. It has got to be adjusted. For example, there are 75,000 registered dock workers in this country, but there is nothing sacrosanct about that figure. There is no reason why it should not be 65,000, especially if those men are all getting very much better-paid employment under very much better conditions.

THE CHAIRMAN: Sir Leslie, I wonder whether you would care to comment on the possible effects on the Port of London of the opening of the new St. Lawrence Seaway? Can you gauge at this stage what effect that is likely to have?

THE LECTURER: I should not think that the opening of the St. Lawrence Seaway is going to have a very great impact on the Port of London. One of the things which strikes me in all the talks and articles on the Seaway is the silence on the fact that it is open for five months of the year and closed for the other seven months. It is true that since the Seaway was opened, additional services of the smaller type of ship have been operating out of London, but I think I must acknowledge that by and large there is a better service in the West Coast ports, such as Liverpool, on the North Atlantic run to Canada than there probably is to London. Ironically, the way in which London hopes to profit by the opening of the St. Lawrence Seaway is not by the additional traffic which will go through the Seaway, but by the almost frightened energy of my American port friends caused by the thought of what they are going to lose. Three very large American ports have in fact opened offices in London and on the Continent, and are so assiduously tearing round after traffic which they hope to keep that I think possibly they might even be getting some new traffic, and in that way we may profit.

THE CHAIRMAN: It is a pleasant duty indeed to propose a sincere vote of thanks to Sir Leslie Ford for his paper this afternoon, and for the showing of this film. I found his paper of the greatest interest, and it was borne in on me how, in detailing

to us the history of the Port of London, Sir Leslie was really telling us the history of London itself. London and the port, London and the river, are inseparable. As Sir Leslie has shown us this afternoon, a vast proportion of the prosperity of this country has been built upon this great facility, and I am certain that you would like me to express through our distinguished lecturer this afternoon to the Port of London Authority itself our hopes for its continued success and our thanks for the great contribution which it and all its servants make to the well-being of our nation.

Between the Authority and the Ministry which I represent here this afternoon there is, as I said earlier, the closest affinity. I hope that we shall go on in this way for many years to come. I know sometimes people rather feel that governments may come and governments may go, but the Port of London Authority goes on forever. I was much struck by the remark made by the Alderman of Queen Mary: 'By God's grace, we shall do well enough at London whatsoever become of the term and parliament'. Sir Leslie, I hope that in the years to come your Authority will continue, whatever be the term and whatever be the parliament, to do as well as you have done in the past. In expressing to you the thanks of us all this afternoon may we congratulate you and your Authority on an excellent record.

A vote of thanks to the Lecturer was carried with acclamation and, another having been accorded to the Chairman upon the proposal of Mr. G. E. Tonge, the meeting then ended.

THE CONTRIBUTION OF PSYCHIATRY TO MODERN MEDICINE

A paper by

DAVID STAFFORD-CLARK, M.D., F.R.C.P., D.P.M.,

read to the Society on Wednesday, 3rd June, 1959,

with Sir Selwyn Selwyn-Clarke, K.B.E., C.M.G.,

M.C., M.D., F.R.C.P., M.R.C.S., a Member of

Council of the Society, in the Chair

THE CHAIRMAN: I personally enjoy an address much more if I know something about the background of the speaker. I am going to assume that some of the audience share that viewpoint. Dr. David Stafford-Clark studied medicine at Guy's Hospital and qualified in 1939. After initial house appointments he joined the Royal Air Force, and served for six years, acquiring some 250 hours of flying experience in operational aircraft, as an auxiliary member of the crew, and later as a medical parachutist. (I am sure you would agree that he probably carried his life in his hands on many occasions.) He was mentioned in despatches on two occasions for his gallantry and devotion to duty. At the end of the war he returned to this country and took the highest qualifications in general medicine and in psychological medicine. He was elected a Fellow of the Royal College of Physicians last year. He visited the United States on a Nuffield Travelling Medical Fellowship in 1949-50, and while in that country was appointed to a clinical Fellowship at the Massachusetts General Hospital and to a Teaching Fellowship at the Harvard University Medical School.

I have in my hand one of Dr. Stafford-Clark's published works, *Psychiatry To-day*. It was first published in 1952, and further editions were called for in 1953, 1954 and 1956; I think the extent of this demand is such as to indicate the book's excellence. He is also the author of a chapter in *Emergencies in Medical Practice*, a chapter on 'Psychiatry and the Law' in Taylor's *Medical Jurisprudence*, a chapter on 'Drug Action in relation to Schizophrenia' in *Schizophrenia: Somatic Aspects*, as well as some fifty original papers contributed to professional journals. He has also published two books of poetry, and a third collection of poems, as yet unpublished, awaits a revival of public interest in that form of communication. He has written a number of travel articles as a result of extensive journeys in the Americas, in Europe, and in Central and South-East Asia. Dr. Stafford-Clark is now physician-in-charge of the Psychological Medicine Department and Director of the York Clinic at Guy's Hospital, and also a consultant physician at the Bethlem Royal and Maudsley Hospitals, which as you probably all know, are regarded as the holy of holies in the psychiatric world. He is known to many thousands of persons in this country through his admirable B.B.C. broadcasts and television talks.

Now, I should like to say a little about the importance of Dr. Stafford-Clark's subject. First of all, I think one must admit that many members of the general public and not a few members of our own medical profession regard the psychiatrist as 'a person apart'. You are probably all familiar with that crack against psychiatrists which says that a neurotic is a person who builds castles in the air, a psychotic is a person who lives in those castles, and a psychiatrist is the person who

collects the rent! But more seriously—it is, I believe, common knowledge that nearly half the hospital beds in this country are occupied by persons suffering from mental ill-health. Now if, as we all hope, the recommendations of the Royal Commission on the Law relating to Mental Illness and Mental Deficiency are implemented by the Mental Health Bill which goes before the House of Lords to-morrow—it passed its third reading in the House of Commons on 6th May—the result will be that a very large number of persons suffering from mental ill-health will be cared for in their own homes instead of in hospital. There are already too few psychiatrists in our overcrowded hospitals. It is obvious then that, when a number of patients are dispersed and scattered amongst the community, the shortage of psychiatrists will be felt even more acutely than before. Therefore, it seems to me important that the general public should have a clear understanding of the duties and responsibilities of this skilled and overworked section of the medical profession, and I am sure you will agree that it was a happy thought to ask Dr. Stafford-Clark to address us this afternoon.

The following paper was then read:

THE PAPER

The essential task of the doctor might be defined as the prevention or relief of suffering, and where possible, the healing of the sick; and this must necessarily include the sick in mind as well as the sick in body. The fundamental implications of this definition are surely that the final aim of the physician or surgeon is to make what contribution he can to the happiness and well-being of the individual and the community.

Modern psychiatry has an indispensable contribution to make to this overall task; the basis for this contribution extending throughout all the important fields of medicine and surgery, but being particularly suitable for review within the compass of this paper, under the three fundamental headings of *Aetiology*, *Diagnosis*, and *Treatment*. In fact, the essential link between psychiatry, general medicine, surgery, and obstetrics, lies in the ultimate impossibility of treating states of mind apart from states of body, or states of body apart from states of mind. If psychiatry made no greater contribution to the balance and equilibrium of the general medical curriculum than to endorse and emphasize this single fact, its contribution would still be invaluable; for it has all too often been the assumption in the past that, while bodily states have to be exhaustively observed and meticulously studied, mental states can be either taken for granted or dismissed as irrelevant, in the training of the doctor.

Three of the classical headings under which the student is taught to group facts and cultivate a capacity for their assessment in the study of disease, have been mentioned as *aetiology*, *diagnosis*, and *treatment*. Between them, these three embrace the foundations of the whole of clinical medicine. *Aetiology* is the scientific study of causation; it should include a consideration of every factor which may possibly play a part in bringing about the particular disease process concerned. The elaboration and successful understanding of this study leads of course directly into such practical considerations as prophylaxis, the science of preventive medicine.

Diagnosis is the recognition of the nature of the disease process itself, including assessment of pathology; the underlying change which has converted the healthy organism into a sick one. The concept of treatment covers every activity which may be required to restore to health or normal equilibrium the patient so treated; with the task of forecasting the further outlook for the patient included under the heading of prognosis. A brief survey of the contribution made by modern psychiatry to each of these three indispensable fields of activity will serve to develop further the thesis of this paper.

It is one of the cardinal principles of medicine that aetiology is necessarily multiple. So diverse and overlapping are the risks and challenges to the health of the living creature, from environmental stresses producing potentially damaging reactions within the organism, to predators either larger or infinitely smaller than the victim whom they attack or invade, that the concept of multiple aetiology is indispensable to medical education and understanding. Nevertheless, while it may not often be actually forgotten, in practice it is sometimes overlooked.

The idea that there must be a cause is not a difficult one to grasp: but that fact that no single cause is ever entirely and exclusively responsible for a particular disease, is much more subtle and elusive—although incontestable. Tuberculosis is not caused solely by the tubercle bacillus; nor typhoid by the typhoid bacillus; nor poliomyelitis by the specific virus. In each of these instances human beings can and indeed do harbour the pathogenic organism, very often in large quantities within their body, and yet come to no harm. Cold, fatigue, fluid depletion, a generally adverse exchange with the environment, and not least of all, fear or unhappiness, may be important predisposing and contributory causes.

But what medicine as a whole has to teach both student and public, psychiatry, as that branch of medicine specifically concerned with the life of the mind and its repercussions upon the life of the body, may have occasionally to teach all three. The study of the aetiology of a disease demands careful attention to the patient's history. This includes not simply the history of his personal life and previous health or sickness but also and inevitably the background to his family existence, and the interaction between his developing personality and the stresses of his emotional life, which may prove to be supremely relevant. The taking of a good history is rightly regarded as the mark of a good doctor; the contribution of psychiatry at this stage is to demonstrate ways in which a good history can be improved.

The technique of history-taking, embracing detailed attention to every aspect of the patient's life, from his early childhood to his present marital or occupational difficulties, tracing these through the development of individual personality, through school days, adolescence, and all the readjustments, ambitions, daydreams and disappointments which accompanied them, as well as considering family background and constitution on a wide basis, is at the disposal of every general practitioner as an invaluable addition to his clinical equipment; whether in practice he chooses to use this in full, often or seldom. Naturally it will not always be necessary; but equally naturally perhaps, it is

a technique which a doctor can only use if he has been properly trained to undertake it: and if he never uses it, he will never begin to realize how useful it can be. Through such a history not only does a more complete picture of the patient as well as his complaint steadily emerge, but the *rapport*, gratitude and confidence felt by a patient for the doctor who displays so careful and penetrating an interest in his case is itself of therapeutic value. Dr. T. A. Ross embodied this observation in a memorable phrase: 'So long as the patient is being treated, he is being examined; so long as he is being examined, he is being treated.'

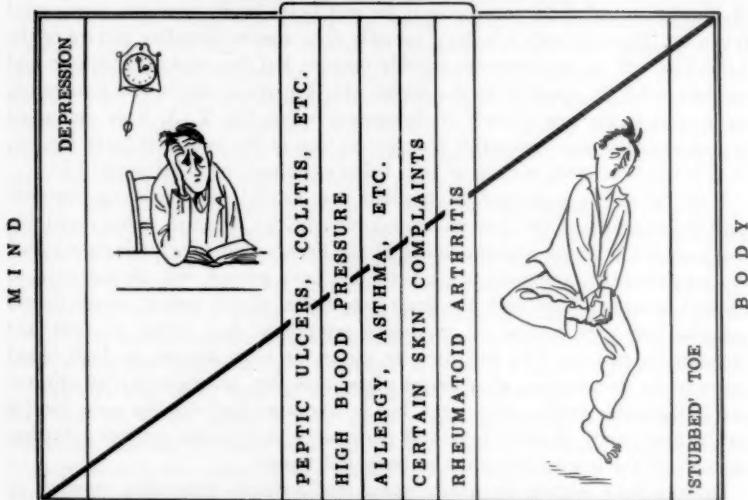
It is from this technique of detailed and careful history-taking, together with the widening of the concept of multiple aetiology to which it has inevitably led, that much of our understanding of the background to what is now called the psychosomatic approach to medicine has been gained. We do not need to concern ourselves here with the great proportion of sick people whose illness presents primarily mental or emotional symptoms; but rather to turn our attention to patients with fractures, or ulcers, or heart disease, or high blood pressure, or rheumatism; all sufferers whose disability carries with it an obvious and indisputable bodily component, but in whom we find that the same careful and patient study of their lives and personality as a whole, reflects a further example of the inseparable unity of body and mind.

Doctors have known for many years that anxious, miserable, worried or irritable patients heal slowly and relapse often. The study of psychodynamics on the one hand, and of the physiology of emotion on the other, have cleared the way for that integration of psychiatry and general medicine, whereby physical illness can be studied from a psychiatric standpoint, as well as psychiatric illness from the standpoint of physical change. In this respect both general medicine and psychiatry are only catching up with what has been called common sense or everyday knowledge; although it is unfortunately true that common sense is by no means as common as might be supposed, nor everyday knowledge nearly as widely recognized or understood.

An example here taken from a book I wrote some years ago may help to illustrate this point. Common sense and everyday knowledge tell us that blushing, weeping, laughing and trembling are all physical states which are produced and maintained by emotion. When emotion is continued for a long time the physical changes may themselves become in some degree modified or permanent. After prolonged grief and much weeping you are left with a swollen blotchy face; you do not regard this as an illness, but it is indisputably a physical symptom and it requires time to get well. You may treat it physically with cold water or cosmetics. One thing you will certainly not do is to doubt or deny its emotional origin, at least to yourself.

The study of bodily changes which appear to be due or at least frequently linked to emotional states, has been undertaken by very many investigators, particularly during the last thirty years. The briefest exposition of their overall conclusions will be aided by a study of the diagram. We can picture the mental and physical sides of human life as two aspects of the same whole, and we can draw them as two triangles fitted together to make one simple rectangle. The

'PSYCHOSOMATIC GROUP'



diagonal line down the middle of the rectangle is a purely arbitrary division between the two, which are really of course inexplicably mingled. But if we think of any illness or disability we can put it at some point on this arbitrary diagram so that the diagonal will divide it roughly in the proportions in which the two aspects are involved.

If therefore we consider to choose for example a broken leg, a sprained ankle, or even a stubbed toe, in most cases this will be almost entirely a physical misfortune with physical causes and physical symptoms; but there will inevitably be an emotional side to it. This may simply be the distress and anxiety caused by the pain and inconvenience. In this case symptoms will be purely referable to the initial injury; but it is not impossible that we may have stubbed our toe because we were worried, anxious, impatient, or in a temper, just as Professor Higgins fell upstairs because he was angry with Eliza Doolittle. In the light of the psychodynamic tenet that our day-to-day moods, feelings and behaviour are liable to be significantly influenced by entirely unconscious mental processes, this point becomes even easier to understand.

At the other end of the scale we can put, for example, severe depression. Here the emotional element is the strikingly obvious part of the disability; but the physical changes are represented partly in the symptoms of impaired digestion and elimination, loss of appetite, weight, and speed of muscular response, and partly in the glandular and biochemical changes in the brain which, like the accompanying mood changes, are reversible by appropriate physical treatment.

The group of illnesses which lend themselves particularly to the psychosomatic

study can now be seen to be simply those illnesses which happen to fall somewhere about the middle of the scale. They include such conditions as ulcers of the stomach and duodenum, various forms of colitis, many cases of high blood pressure and some forms of heart trouble such as angina, as well as such apparently diverse ailments as certain skin diseases, allergic complaints like asthma and hayfever, and also migraine, rheumatoid arthritis, and on occasion diabetes mellitus.

On the physical plane the diversity of these illnesses is by no means as great as it may seem. Both angina and migraine, for example, depend for their appearance upon alterations in blood flow through the arteries supplying respectively the heart and certain parts of the brain and its coverings. Moreover all these complaints have in common the importance of the contribution of the autonomic nervous system (that part of the nervous system not directly under conscious control and concerned with the automatic regulation of bodily function) in their development. The factor which they share which from our point of view is the most striking, and incidentally the most recently established, is the large part which continued emotional stress appears to play in producing and maintaining them. The example of diabetes mellitus is worth elaborating briefly.

When I was a medical student, we were rightly taught that the failure of normal uptake of sugar from the blood stream into the muscles and other organs where it could be employed as a fuel, which is the salient feature of diabetes, was due in turn to a failure of secretion of insulin from the pancreas. Without going into unnecessary detail, one of the important ways in which diabetes can be controlled, although it can never be entirely cured or reversed, is by the administration of insulin obtained from suitable animals, to the patient.

The calculation of the quantity of insulin required for each patient to balance his output in energy and his intake in sugar, is a matter for skilled and careful initial determination, and subsequent regulation and supervision. Twenty-five years ago, we knew that certain disasters could change the insulin tolerance and therefore the entire equilibrium of a diabetic patient. Chief among these were infection, and the physiological shock associated with injury or even with operation under anaesthesia. The contribution of the psychosomatic approach to medicine has since taught us that another and powerfully significant factor can be emotional disaster.

Sudden bereavement, the infidelity or desertion of a husband or wife, or even the collapse of a business or the loss of a fortune, can precipitate diabetic coma in a previously stabilized diabetic in precisely the same kind of way as infection or physiological disturbance. It would seem that underlying a finding of this kind is an innate consistency of response by living creatures to all they have to endure, whether it be fear or pain, hunger or infection, emotional stress or physical disease.

We know indeed that sudden shock, whether the cause be physical or emotional, can produce sudden and sometimes catastrophic results. We have begun to see now that in a different way the long-continued battle with stress

and tension which it is the lot of so many of us to fight, is not a battle in which it is always very profitable to distinguish between hard knocks and hard feelings; nor are the scars borne separately upon the body or the mind. They have their being, like those who carry them, somewhere in the tangled, intricate, and mysterious unity of mind and body, spirit and flesh, which is man himself. This contribution of psychiatry to the concept of aetiology as a whole could ask for no greater justification, nor could its implications be more profound or far-reaching.

The contribution to diagnosis is no less important: it can be considered both in general and in particular. In the past, the emphasis in teaching medicine and surgery to students has tended to label neurotic patients with what amounts to a moral stigma. Differential diagnosis is that aspect of diagnosis which considers all the possibilities in a case: whereby clinical judgement, wisdom and experience, supplemented by the sensible minimum of essential investigations, select the most likely diagnosis by excluding those without confirmatory evidence from history or appropriate structural change. But in a very significant proportion of patients no evidence of structural change may be found at all; these patients may then be labelled as 'functional'. Illness thus tends to be classified as either 'organic' or 'functional'. 'Organic' conditions are those in which demonstrable structural changes have occurred, in contrast to those in which the disorder is less tangible, although no less real; a gastric ulcer is organic, but dyspepsia without evident structural change is functional. By an inevitable process of human prejudice and over-simplification, readily absorbed during the student period, 'organic' comes to be acquainted with 'real or important', and 'functional' with 'neurotic'; and therefore with 'imaginary' or 'insignificant'.

This can lead to an insidious corruption of the diagnostic process, whereby the sheep are separated from the goats, the physically ill from the emotionally disturbed, or maladjusted; and with this the physician's obligation to the neurotic patient is too often presumed to be discharged. The sheep are gathered into the clinical fold, for further investigation and treatment; the goats are apt to be sent away with a firm reassurance that there is nothing to worry about—somewhat ironic advice to those whose basic disturbance is frequently an apparently causeless anxiety and distress.

Not only is this separation artificial; it is also unscientific, confounding treatment as inevitably as it confuses diagnosis. It is, of course, true in one sense that these patients have begun by confusing the issue themselves; they have complained of organic symptoms because in their own minds this is so often the way in which their mental disturbances announce themselves. The prejudice in favour of something physically wrong is not confined to our profession: it is widely shared by our patients. Yet whilst this is an observation that must occur repeatedly to very many doctors, it is one which perhaps too few of us seek to explain. It is almost as though we embraced the prejudice whilst evading its examination; always a powerful indication of emotional bias.

One reason for such a prejudice, apparent to the psychiatrist, must be conveyed by him to his students and colleagues. An organic lesion is commonly easier to

diagnose with precision, to demonstrate, and to treat; moreover, its modification or disappearance is an objective indication of cure—or at least tangible evidence of improvement—an outward and visible sign of some degree of success. Against the neurotic patient, with his indefatigable capacity for continued complaint, seemingly unrelated to any objective pathology, many a harassed physician has felt driven to attack as the best method of defence. The patient's reaction to this is to cling yet more stubbornly to the idea of a physical basis for his symptoms and to describe them in physical terms. Not only does this seem more respectable to him; he assumes it will also seem more respectable to his doctor. Moreover, many patients' powers of introspection, description, and self-analysis are sufficiently limited to make physical complaint the only way in which they can either experience or express their need of help.

'There is really nothing the matter with you', says the exasperated physician, aware that this is only a half truth and therefore no truth at all. And, 'You really must pull yourself together . . .' echo the patient's friends, unable to contain their hostility to a weakness whose implied demands seem so unreasonable, since their own comparable weaknesses have long ago been curbed in anguish and tempered by necessity in a more adult acceptance of reality. Moreover, they have been scarred by this tempering process: they remember it as painful, a price demanded and paid for maturity; they are angered by the apparently ruthless determination of the neurotic, weak as he appears in other ways, to avoid it at all costs. The challenge of maturation, which to them seemed inescapable, is one which they are determined he shall face; they will not, they cannot, excuse him from it: and when they tell him there is nothing the matter they are seeking not simply to encourage or reassure him but also to attack him: to rub salt into wounds whose very sensitivity offends them, in contrast to their own old but honourable scars.

Yet the patient, all too keenly aware that there is something very gravely the matter, but unable to acknowledge or understand what it is, repeatedly takes his sick and aching heart, his completely unresolved tangle of self love and self disgust, his fear and guilt and hate and shame, and lays them before the doctor disguised as complaints of nausea, angina, diarrhoea, splitting headaches, sweatings, palpitations, breathlessness on exertion, insomnia, loss of weight and appetite, and so on. Nor are perfectly genuine complaints of this sort among neurotic patients confined to those with psychosomatic lesions; they are equally common among patients with anxiety and depression, both conditions capable of precise diagnosis once their reality has been recognized, and their entity as psychopathological and physiological conditions fully understood. So common indeed are they that the percentage of these patients among those attending doctors' surgeries, or general medical outpatients, has been variously reckoned as between twenty and fifty per cent.

The diagnosis of depression, of hysterical symptoms which emerge in the course of some overwhelming stress or threat to the patient's physical or emotional integrity, and of those states of anxiety and tension which characterize the response of human beings to so many of the prolonged threats and challenges to

their equilibrium with which their life confronts them, are all aspects of the task of the doctor, whether he be general practitioner, general physician, surgeon, or any kind of specialist, including psychiatrist. But it is the psychiatrist who has to teach this material to the student, and the psychiatrist who must maintain his balance as a general physician so that he can both introduce and assess the importance of these ideas in the overall approach of his colleagues to their vocation.

Undiagnosed and untreated, depression can lead all too readily to death. It is probably true that at least twenty per cent of all patients suffering from serious depression, no matter what the accompaniments of this syndrome in the form of other disease or disability, sooner or later make an attempt at suicide: and of these twenty per cent, about half are successful. Such conditions may well be responsible for up to a third of all suicides: yet in less than a tenth of all such cases has a diagnosis been made or treatment been given.

And this brings us to our final and perhaps most conclusive recognition of all, namely, the contribution of psychiatry to treatment in its widest implications. We have already seen the danger in the approach to treatment, implicit in the strict division of diagnostic categories into organic and functional; particularly when the latter diagnosis becomes linked in the student's mind with an impermissible kind of stigma. The element of human suffering tends in this way to be discounted, and a peculiarly indefensible professional callousness and superficiality to be encouraged.

To sift out such patients as a diagnostic exercise, much as a witch doctor smells out bad men, before consigning them to the outer darkness of their own loneliness and inadequacy, is unquestionably not enough. Their very frailty, untreated, must inevitably drive them to consult someone else and, with ebbing courage and self-respect, to embark on a round of other hospitals or clinics. They become recidivists in hospital practice: a burden to themselves and to the doctors.

By contrast, the complexity of human suffering demands that doctors be trained to deal with unhappiness and fear as well as with pain: with defensive shyness or reserve, as well as with the physical guarding of tense muscles over a tender spot. They need to learn that brusqueness can be as cruel as clumsy handling of damaged tissues, and that the relationship between doctor and patient demands as much forbearance, imagination and unselfishness as that between parent and child. Yet they cannot be expected to gain this necessary wisdom from the precept or example, still all too prevalent, which leads them to regard the diagnosis of neuroses in patients complaining of physical symptoms as tantamount to the unmasking of an impostor—a process of scientific deduction which may bring credit and satisfaction to the doctor, but which is chiefly valuable in relieving him of any further responsibility towards the patient so skilfully discredited. What then is the contribution of psychiatry to this problem?

I think the text of its message, of the precepts which psychiatry must hold and the example which psychiatry must set, can best be summed up in a memorable line from Arthur Miller's play, *Death of a Salesman*. The words are spoken

by the wife of the doomed man, when she is attempting to awaken the conscience, compassion and humanity of her two sons towards the father who has endlessly indulged them but whom they now affect to despise. They have discovered his pathetic and sordid preparations for suicide—the length of rope in the garage, the rubber tubing which he has contemplated connecting to the exhaust of his car. Projecting some of their guilt as hostility towards this man whom they now can see only as a source of worry to the mother on whom they still depend, they wax indignant about his cowardice and underhandedness in thus sneaking off ignobly to die, leaving all his problems still unsolved. Their mother, suddenly became wise and eloquent in her comprehension of the ultimate tragedy of the situation, rounds on them fiercely, reminding them both of their relationship to their father, of his need of them and of her, and of his search for an understanding which he has never achieved—either from most of the people with whom he has dealt, or of himself and within his own heart.

'Attention', she says, 'attention must finally be paid to such a person . . .'

This above all seems to me to be the key to the practice of medicine and surgery as well as to the practice of psychiatry; the key to the contribution which psychiatry has to make, and to the values which it enshrines. Attention must be paid to the individual man and woman, no matter what the nature of their sickness or suffering, no matter how severe the disturbance or distortion of their world or their contact with others, no matter how strange or even frightening they may appear, no matter how sordid or ignominious their predicament. In the special context of this phrase 'attention' means, not simply interest, not even simply compassion, but the active dedicated, detached, but uncompromising love for other human beings which alone can inspire and ultimately crown the highest endeavours of medicine.

It makes no difference whether the disorders from which the patients are suffering are primarily psychiatric in origin, whether they arise from structural lesions, or whether they produce intractable pain of undefined origin. Often when attention is paid to them, the whole picture of their disease can become clarified, the meaning of their suffering can be comprehended, and ways both of reaching them and helping them can be opened up. Psychiatry has of course a great deal to teach in the routine recognition and treatment of its own specific disorders. But the way in which a department of psychiatry in a teaching hospital makes its most consistent and productive contribution to the teaching, and indeed to the whole climate of opinion in the school and hospital, is through the services it can perform, and the example it can set, in the care of those patients whose illness combines some form of structural disorder with some impairment or estrangement of normal behaviour.

Included among such patients are those who develop states of toxic confusion or delirium in the course of previously routine medical or surgical illness; patients in whom the emotional stress or threat of some physical disorder may overwhelm their normal capacity for contact and co-operation with those who look after them. Examples from day-to-day current practice could be multiplied

indefinitely; two or three selected from an innumerable variety in my own experience will serve to make the point here.

Some years ago a young woman in her early 20s was transferred after consultation to the care of the Department of Psychological Medicine as an in-patient, with a five-year history of severe epigastric pain and a proved ulcer with several relapses between the ages of 19 and 23. She had ultimately undergone an operation for partial removal of the stomach after both she and her parents had brought considerable pressure on the family doctor to do something for the relief of symptoms. She had been described as having been a girl of high spirits and ebullient personality before the onset of her illness, which had reduced her to piteous invalidism. The consultation which led to her transfer from a general ward to the Psychiatric Unit, took place while she was suffering from acute pain, almost continuous in nature, and which had been relieved neither by appropriate medical treatment nor by drugs of any kind. At night she had been frantic with distress and almost inaccessible; sleeping very little and complaining of constant and incessant pain. There was clinical evidence that bleeding was occurring within the gut, although repeated and careful studies revealed no recurrence of the original ulcer.

Careful attention to the overall personal and family background revealed that her relationship to her family was an intensely divided one, with hysterical dependence on the parents vying with a vivid and intensely felt but hitherto unexpressed blend of outrage and bewilderment at their own marital disharmony and its projection upon the patient's life and freedom. When this matter was resolved, with all the care and patience which proved indispensable to the needs of the situation, she rapidly became free of pain, and restoration and normal exercise of appetite coincided with complete subsidence of all clinical signs and symptoms.

A 35-year-old childless housewife, with relatively severe valvular disease of the heart, was seen at the request of an eminent surgical colleague who had proposed operation to relieve her intense physical disability secondary to her heart disease. While under his care, and receiving the appropriate attention and preliminary investigation for the brilliant operation which he was prepared to undertake, she became increasingly alarmed and began to develop delusional ideas; for example that her heart had been punctured during the course of the investigations and was collapsing like a shrivelled balloon; and that it would not be safe for her to eat anything because her intestines had become a series of gutters in danger of overflowing their contents, which would then accumulate and putrefy in the bottom of her pelvis. Psychiatric examination revealed a history of schizophrenia in her family; and in her own case there could be little doubt that the basic psychiatric syndrome was a chronic paranoid schizophrenia with bodily delusions released by the stress and fear of the approaching ordeal.

Appropriate treatment was successful in restoring completely her morale and mental and emotional clarity. She lost her delusional symptoms, and after four months was considered fit to undergo the operation which in fact proved highly successful. It is now her own and her husband's hope that she may be

able to have child, and if she in fact becomes pregnant she will certainly be followed carefully but unobtrusively throughout her ante-natal examinations by our own department, as well as the obstetric team concerned.

Another case in which co-operation between the Psychiatric and Cardiac Departments proved invaluable was that of a young girl of 19 who had suffered from a lifelong disability due to congenital heart disease, for which surgical repair had been considered possible. She too developed symptoms of marked emotional disturbance, wandering about the surgical ward into which she had been admitted, trailing her night-gown and tearing and scattering pieces of paper on which she had scribbled numerous incoherent messages. Her behaviour resembled that of an imaginative schoolgirl acting the part of Ophelia.

This proved to be an hysterical reaction, provoked by the conviction that she could not hope to survive an operation upon an organ as vital as the heart, whose disability had caused her relatively complete invalidism throughout her whole life. Yet she had been unable either to express her fears, or to weigh up the alternatives, and felt herself inexorably destined to die under the anaesthetic without having communicated her anxieties to anyone. She too received a combination of psychotherapy and quiet confident nursing and supervision in the Psychiatric In-Patient Unit to which she was admitted. Her disturbed behaviour was tolerated without comment, while its causes were gradually revealed and dealt with by appropriate psychotherapy, and its manifestations modified by tranquillizing drugs. Nevertheless it took this extremely vulnerable and immature young woman five months to be fit for operation. When eventually the operation was undertaken, it too proved completely successful. It is perhaps an interesting and ironic observation on the attitude of patients to their own emotional disabilities, that this girl subsequently received a request from a weekly magazine to write a personal account of the treatment and operation which had turned her from a total invalid into a vigorous and healthy young woman. Her ghosted account omitted completely any reference to the five months' work by the Psychiatric Department which had enabled her to undergo the operation which formed the turning point in her life.

States of delirium developing in the course of acute illness of all kinds can also produce behaviour on the part of patients in which regression to destructive infantile or aggressive patterns of behaviour may prove intolerable on a general ward, unless understanding and acceptance of the patient's special needs can enter sufficiently early into the clinical management of the case. It seems relatively certain that such disturbance in consciousness and contact with reality, which can follow chemical changes in the brain secondary to infection or exhaustion, may be sufficiently alarming to the patient to combine subjective terror and often obstreperous or defensive behaviour, with objective inaccessibility. This combination is in itself threatening to the confidence and control of the situation on the part of doctors and nurses responsible for the care of the patient: and this in turn can grievously impair the morale of the ward in which the patient is being treated. When such doctors and nurses have learned a technique of handling such patients which not only restores the patient's own contact,

confidence, and tranquillity, but at the same time removes the innate fear and hostility which such conduct formerly aroused in those responsible for the patient's care, then a revolutionary achievement has been secured. It is by setting this example, and in making this contribution to work with disturbed patients throughout a hospital, small in proportion to the total number of patients treated as these special examples may be, that a department of psychiatry can make its most profound and invaluable impact upon the hospital as a whole.

Indeed the acceptance of such patients as human beings troubled by fear, bewilderment, or biochemical changes in brain function incidental to the course of other illness, is something which can most vividly be demonstrated in practice by the way in which a psychiatric unit handles problems of this kind from its sister units within the hospital. Doctors and nurses who would be ashamed to falter at the sight of a catastrophic haemorrhage, or to shrink from a stinking wound or a hideous mutilation, need confidence and experience to overcome the deeper and more primitive hostility engendered by a disturbed patient in a previously well regulated ward. The psychiatric department can share their burdens and come to their rescue. The ultimate achievement will then be the embodiment of these simple but effective principles throughout the entire hospital, with a corresponding increase in overall flexibility and competence.

The contribution of psychiatry to a fuller understanding of the principles and practice of medicine must surely be to underline a single fundamental truth: the ultimate wholeness and essential dignity of man. For although the technique of psychiatry as part of the training of a medical student is of great importance throughout the entire complicated field of human relationships, and of mental health and sickness, it is in this bridge between what are commonly regarded as essentially medical surgical, gynaecological or obstetric disorders, and their emotional aspects and manifestations, that the whole truth of medicine begins best to be understood.

Confronted by any sick, frightened, disturbed or unhappy person, the doctor can always remember this simple precept: 'Attention must be paid to such a person. . . .' Once a patient realizes that you care about how he feels, then you have given him a bridge, to link his need to your capacity to help him, a bridge which he can cross to meet you, and which you can cross to meet him. In the face of physical disaster to a fellow human being, we all tend to experience a precious natural humility; and it is this which gives the greatest physician or surgeon the necessary gentleness to perform whatever service is possible. In the presence of any aspect of suffering or distress, the contribution of psychiatry should enable the doctor always to cultivate the same kind of acceptance and humility, and thereby enable him to perform the same and equally invaluable kind of service.

It is my honest belief that medicine is a splendid vocation and that doctors are, on the whole, good and dedicated people; but until their training receives adequate reinforcement in the direction of the psychological element in health and sickness, they may find it hard to achieve the balanced vision, wisdom and sensibility which we, as their teachers, owe it to them and to their patients to provide.

DISCUSSION

MRS. DAPHNE LOUCAS: I am a housewife, married to a very junior psychiatrist. I am shattered at the number of times I am asked by people in the medical profession, 'What does your husband do?'—and when I answer 'Psychiatry', a cloud, an embarrassed look, comes over their faces. I wonder whether there are any serious moves on foot to examine medical students in psychiatry as part of their general examination?

THE LECTURER: One has to ask oneself honestly why psychiatry has often received public odium and derision. There are a number of reasons. One is of course that an illness involving personality and communication between human beings is terrifying and appears to be nebulous, and it is easier to deny or to deride it than to deal with it. It would be comforting also to think that no special knowledge was necessary, because then no special threat would be implied by the illness.

Also, of course, psychiatry has to put its house in order. Whenever in the history of medicine there has been a dearth of adequate treatment, as has been the case in psychiatry until fifty years ago, people have tended to assume specialist status without either the training, qualifications or experience inseparable from the adequate discharge of the responsibilities assumed. It is therefore unfortunately true that there have been people calling themselves psychiatrists, and there are to-day people calling themselves psychiatrists, without discoverable claim to that title. There are people who call themselves psychiatrists who are not even doctors. Such people can do immeasurable harm, but we would be wise not to be sidetracked into making scapegoats of those elements within our own branch of medicine who are disreputable. After all, there have been disreputable surgeons and physicians, and surgery and medicine have survived nobly.

I think that the growing contribution of psychiatry to medicine will certainly prevail, in the sense that the emphasis in this country to-day is on under-graduate and post-graduate training of an infinitely higher order than was ever given even twenty-five years ago. Now medical students are taught psychiatry by people whom they can respect as physicians, and they can see for themselves the benefits of consultation between psychiatrists, surgeons, obstetricians and physicians in their common task. Nowadays also they may expect questions in their general medical examinations about such conditions as schizophrenia, anxiety states and depression. It is still a matter of some regret to those members of my branch of the profession who are concerned with the examination of medical students, that in general medical examinations such questions, although rightly set, are often set and corrected by physicians who are not quite up-to-date in this subject themselves. Nevertheless we must accept good will for what it is.

Within twenty-five years, but perhaps not before, there will be a further change, because we shall be reaping the fruits of this sound professional training and increasing public enlightenment. The contribution of psychiatry cannot fail to illuminate medicine in the way I hope I have shown, and by illuminating medicine and surgery it must, like all else which has illuminated medicine and surgery, bring in the end its own reward. Such reward will come despite the mists and errors of hundreds of years of neglect, superstition and calumny—not all of it as yet eliminated, nor all of it unfortunately entirely undeserved even now; but all are yielding at last to the truth.

MRS. F. C. FOREMAN (Chartered Physiotherapist): I have become very interested in psychiatry since I have come to realize that physiotherapists need to incorporate a certain amount of psychiatry in their approach to their work. Where is it possible to learn more about it? By books? By correspondence courses? I am here on a short visit from India.

THE LECTURER: Although reading books is always an excellent introduction to any subject and can stimulate the imagination, and although there are books which are both readable and worth reading in this subject, the way to learn anything about the practical implications of psychiatry is to attend the clinical practice of a department. Without going into more detail here, I should say that a visitor with your interests and background would not find it difficult to get accepted—to sit in on case conferences and clinics at any one of a number of departments in which this work is done, and where your interest and your knowledge and your desire to learn will be respected, and I hope rewarded and fulfilled.

THE CHAIRMAN: I should think we all agree that, despite the fact that the medical curriculum is already over full, in a situation where there may be thirty or even up to fifty per cent of patients suffering from psychosomatic conditions, it is essential that very much more training in this subject should be given to students.

I should like just to underline one of the statements which our lecturer made because it seems to me it is one of his gems of wisdom that one cannot emphasize enough. He said, 'In the face of physical disaster to a fellow human being, we all tend to experience a precious natural humility; and it is this which gives the greatest physician or surgeon the necessary gentleness to perform whatever service is possible. In the presence of any aspect of suffering or distress, the contribution of psychiatry should enable the doctor always to cultivate the same kind of acceptance and humility, and thereby enable him to perform the same and equally invaluable kind of service.' Then Dr. Stafford-Clark went on to say, 'It is my honest belief that medicine is a splendid vocation and that doctors are, on the whole, good and dedicated people; but until their training receives adequate reinforcement in the direction of the psychological element in health and sickness, they may find it hard to achieve the balanced vision, wisdom and sensibility which we, as their teachers, owe it to them and to their patients to provide.' Incidentally, the book which his modesty forbade him to mention by name is the one I held up at the beginning of this lecture, *Psychiatry To-day*. I have not read every line of it, but enough to remember that his reference to physical states comes on page 234; you remember he mentioned the emotional states of laughing and crying. (In parenthesis, may I tell you a story against myself? When I was returned, from a long period of solitary confinement in prison, by my Japanese captors to my wife and child, who were then in a concentration camp in the Far East, for the first time in my life I wept bitter tears of joy—which is an example of how one can weep for joy as well as for sadness!) I would recommend very strongly that everyone who is interested in this subject should take the first opportunity of possessing himself or herself of this book.

Now, I am quite sure that it is your wish that we should show to Dr. Stafford-Clark our very warm appreciation of all the trouble that he has taken in giving this address in such a lucid way, and in coming here this afternoon—Derby Day!—to deliver it.

The vote of thanks to the Lecturer was carried with acclamation, and the meeting then ended.

THE ART OF THE AUSTRALIAN ABORIGINES

A paper by

CHARLES MOUNTFORD, O.B.E., F.R.A.I.,

*read to the Commonwealth Section of the Society on
Thursday, 5th March, 1959, with Sir Hugh Casson,*

R.D.I., M.A., F.R.I.B.A., in the Chair

THE CHAIRMAN: May I begin by saying what an honour and pleasure it is for me to be here as Chairman this afternoon. My qualifications are the usual Chairman's qualifications. I have never been to Australia and my ignorance of aboriginal art is second to none in this room! That is why I am looking forward with such pleasure to Mr. Mountford's paper and films. All of you probably know already about Mr. Mountford; but in case you do not, may I just remind you that he is a most distinguished ethnologist with an extraordinary career behind him as an explorer in South, Central and Northern Australia. He is now just completing a thesis at Cambridge, and will shortly return home. So this is positively the last appearance, for some months at least, of Mr. Mountford and we are very fortunate to have him with us.

The following paper, which was illustrated with lantern slides and a film, was then read.

THE PAPER

Tonight I shall tell you about the brown-skinned aborigines of Australia, a race without parallel in the world.

The art of these people is of more than ordinary interest to the student, for in no other country is it possible to study the living art of Stone Age men (comparable, in many respects, to that of the palaeolithic men of Europe), to determine the place of that art in their ceremonial and secular life, to examine the motifs they employ, and the significance of those motifs to the community.

The interest becomes even greater when it is realized that we are examining the art of a people who are of the same physical stock; who follow the same way of life—that of simple hunters and food-gatherers; who hold similar philosophical beliefs; and who, for an unknown, but undoubtedly lengthy period, have been almost entirely isolated from external cultural influences.

The living conditions of these primitive artists could hardly be simpler, nor their material possessions more limited. Following the way of hunters and food-gatherers the world over, the aborigines are entirely nomadic, spending their time wandering from one locality to the next within their tribal country, gathering, at each time and place, just what Nature provides. If Nature is bountiful, they all feast, but if she withdraws from her store, they all starve philosophically until the tide of fortune turns. Their tools, too, are of the simplest description, those of the men being limited almost entirely to spears, spear-throwers, boomerangs and shields, and those of the women to bark and wooden



Aborigines making a ground painting, belonging to the mythical emu, Kalaia. Central Australia

carrying dishes, grinding stones and digging sticks. Except along the southern coasts, where the aborigines wear simple skin cloaks, they use no clothing whatever, both sexes going entirely naked.

Yet, in contrast to this poverty of material goods, the aborigines possess a rich philosophical life based on their creation story of the world. These people believe that, before the time of creation, that is, before there was any life in the world, the earth was a level featureless plain, extending to the horizon, which, to the aborigines, was the edge of the universe. There was no light, no heat, nor did any living thing move on its desolate surface. Then, at some remote period, which the aborigines poetically refer to as the 'Dream Times', giant mythical creatures, half human, half creature, rose miraculously out of the ground, and, travelling from place to place, created the topography, the mountain ranges, the watercourses, the springs and the wide-spreading plains. At the completion of these earthly tasks, these great creators were transformed into rocks and natural features which now form part of the landscape.

These creation beliefs are perpetuated in a wide range of myths, myths that not only provide the aborigines with a reasonable explanation of how the world was made, but which also establish the rules of good living, the behaviour of the aborigines, one to another, and the pattern of their daily and ritualistic life.



Aborigine renovating the cave painting of the mythical snake, Yarapi. Central Australia

Indeed, so important are these beliefs to the aborigines that they are reflected continuously in their graphic arts, their music, their drama and their dancing.

The graphic art of the aborigines permeates all aspects of their secular and ceremonial life: in the decoration of the performers for the ceremonies that commemorate the great creators of the 'Dream Times'; in the rituals that admit the youths into the secret life of the tribe; in their cave paintings and ground drawings, by which the aborigines believe that they can increase the food supplies or control the rhythm of Nature, and in their secular life, where both men and women decorate their objects in everyday use with pleasing designs.

Although the aborigines have not acquired the art of the potter or the weaver—means by which artists of many civilizations have produced objects of beauty—they use a wide range of simple mediums in their desire for artistic expression: their own bodies, the surfaces of their weapons, and implements, the trunks of trees, the walls of caves, the level surfaces of rocks, the insides of their bark shelters, and the various objects that belong to the secret rituals.

The art motifs vary widely in different parts of the continent. In the central and southern regions, they are usually so simple and highly formalized that they

can be interpreted only with the aid of the artist who produced them. Farther north, however, the art becomes increasingly more complex and naturalistic, until, on the northern coasts, it reaches its highest point of vitality and beauty.

Before dealing with the types of aboriginal art, and their associated motifs, I shall describe the materials and techniques used in that art. The art of the aborigines can be divided into four main techniques:

- (a) painting,
- (b) rock marking,
- (c) engraving, and
- (d) sculpture.

(a) Painting

Painting is the predominating technique in aboriginal art. The colours used are red and white ochres, black pigments made from manganese ores or charcoal, and white pipe clay. Sometimes these materials are crushed and mixed with water and a fixative; at other times they are ground, wet, on a rough stone. The aborigines have several different means of applying the wet pigments to the painting surface: a thin strip of bark, chewed at one end; a cylindrical stick, from an eighth to a quarter of an inch in diameter or, on the larger cave paintings, the forefinger, or even the palm of the hand. Occasionally, the aborigines use fixatives, particularly on the bark paintings and the large burial poles. These are, the sap of one of the tree orchids, the whites of turtle eggs, or the honey and wax of the wild bee, well mixed together.

(b) Rock Markings

Rock markings are confined to smooth horizontal and vertical rock faces. It appears certain that these rock markings are an extinct art, none of my aboriginal informants having any knowledge of their origin. Because of this, there is no direct evidence about the tools used. However, as it is possible to produce similar markings with the sharp corners of a boulder of hard stone, held in the hand, it is likely that similar tools were used.

(c) Engraving

The art of engraving is widely used in the decoration of the sacred objects, as well as of shields, spearthrowers and other objects of daily use. As an engraving tool, the incisor tooth of an opossum, still in the skull, was held in the hand and manipulated in somewhat the same manner as used by the modern engraver in metal.

(d) Sculpture

There are examples of both wooden and stone sculptures of men and the creatures. We have no first-hand knowledge, but it seems likely that the stone sculptures were shaped by the abrasion of continuous blows from a small pebble. Although the earlier wooden examples were undoubtedly carved with stone tools, many of the later examples have been made since the advent of steel.

Aboriginal art can be classified under two main headings:

- (a) The immovable art, which includes painting in the caves, on the ground and the inside of the bark shelters as well as carvings on the rocky outcrops, the trunks of trees, the hard ground and in the sand.
- (b) The movable art: i.e., the painted and engraved ceremonial objects, the weapons, the tools in common use and the sculptured figures.

THE IMMOVABLE ART

Cave Paintings

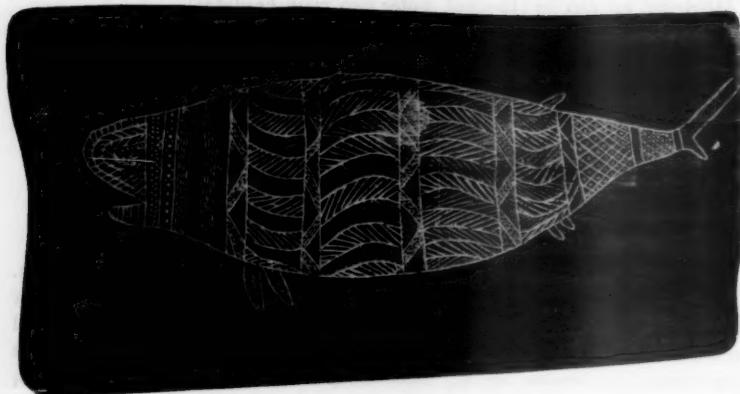
Aboriginal cave paintings are unevenly distributed over most of Australia. The motifs on the southern boundaries are particularly simple, the familiar 'hand stencil' predominating. As one moves into central Australia, the hand stencils become less common, and highly formalized motifs, which consist almost entirely of circles, spirals, meandering and straight lines and crescents, take their place. Representations of men and animals are rare, but not entirely absent. Although most of the cave paintings in central Australia are secular, having little or no ceremonial meaning, I have recently investigated several groups, illustrating complex myths, which are so sacred that no aboriginal, under middle age, is allowed to see them. These cave paintings are linked with ceremonials which the aborigines believe will increase the supply of certain food animals, and plants.

On the north-western, northern and north-eastern coasts, where, it is reasonable to suppose, the aborigines have had sporadic contacts with the people of Melanesia and Indonesia, the cave art becomes much more decorative.

In north-western Australia there are large mouthless human figures, wearing halo-like headdresses, known to the aborigines as the Wandjinjas. When these Wandjina figures are repainted at the beginning of the wet season, the aborigines believe that the monsoon rains will start, the plants and animals will increase in numbers and the little spirit children will leave their home and seek out a mother so they can become human beings.

Northern Australia is the centre of two entirely different art forms. In the first, known as the X-ray art, the artists paint, in polychrome, a creditable representation of a fish, animal or reptile. At the same time they indicate, with considerable fidelity, the internal details, the skeleton, the heart, the stomach and the intestines. Western Arnhem Land is the only place in the world where this curious cave art has been found.

In the same caves as the X-ray art are small monochromatic, single-line figures of human beings in action, fighting, running and throwing spears. The aborigines are definite that these little paintings are not the work of their companions, but of a fairy-like people, whom they called the Mimus, who still live in the rocks and crevices of the rugged outcrops. This vital art form, obviously painted by the members of a previous culture about which the present-day aborigines have no knowledge, bears more than a passing resemblance to many of the cave paintings of southern Spain, the Sahara, and the Bushmen of South



*Aboriginal painting, on bark, of a shark.
Groote Eylandt, Northern Australia*

Africa. It is not possible, with the present state of our knowledge, to even suggest a reason for this remarkable parallel.

Ground Paintings

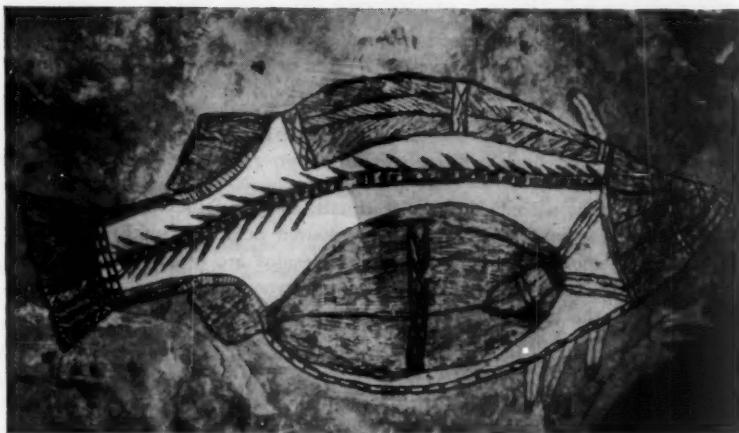
Within a limited area in central Australia, the aborigines, during certain totemic rituals, paint elaborate designs, in coloured ochres, on the surface of the ground, believing that the making of these ground paintings, to the accompaniment of the appropriate rituals, will increase the supply of the particular food, animals or plants with which they are associated.

Sand Drawings

It is likely that all over Australia aboriginal children made drawings in the sand to illustrate the incidents of daily life, or to imitate the tracks of the creatures. In central Australia, and possibly elsewhere, the tribal elders use the same medium to instruct the initiates in the secret myths of the tribe.

Bark Paintings

It appears fairly certain that wherever the aborigines used sheets of bark to construct their wet-weather shelters, they painted designs on the inside of the bark during the enforced idleness of the rainy season. Although few bark paintings from the southern coasts have survived, a considerable number have been collected, in more recent years, from northern and north-western Australia. Many of these northern bark paintings are of surprising beauty, the motifs varying with the locality in which they were made. For instance, those in Arnhem Land are almost entirely naturalistic representations of men and the creatures, while those on Melville Island, about fourteen miles from the Arnhem Land coast, are so highly formalized that their meanings cannot be understood without the aid of the artist who produced them.



*Examples of X-ray art: cave paintings,
Western Arnhem Land, Northern Australia*

Rock Engravings

From our present knowledge, it would appear that rock engravings are sparsely distributed throughout Australia. It is possible that some examples in north-western Australia may have been engraved in recent times, but others which I have investigated in south and central Australia are like the Mimi paintings of northern Australia, the work of some previous culture. Whenever I have asked the aborigines about the origin of the rock engravings, they have, without exception, either not recognized them as human handiwork, or have considered that the engravings had been made by the men of the 'Creation' period.

Ground Carvings

During the long and complicated rituals of the Bora initiation ceremonies on the east coast of Australia, the tribal leaders cut large and elaborate designs on the hard surface of the ceremonial ground. Although many of these designs were naturalistic representations of animals, birds and human beings, the majority were abstract patterns of concentric squares, meandering lines, circles, and other formalized designs. It is indeed unfortunate that the investigators of the early days of white settlement did not inquire about the meanings of the Bora designs.

Carved Initiation and Burial Trees

Surrounding the Bora initiation grounds, the ceremonial leaders also carved large decorative patterns on the trunks of the nearby eucalyptus trees. At one such Bora ground, there are eighty of these trees still standing, fifty years after the ceremony had been held. Trees adjacent to the graves of important tribesmen were also carved with similar designs.

THE MOVABLE ART

The art of the movable objects is much more complex, and covers a much wider range than that of the caves, the rocks or the ground. This art enters all aspects of the aborigines' ceremonial and secular life; in the secret rituals, forbidden to all but the initiated; in the rites of burial, and in the decoration of the tools and weapons.

Body Painting

During both the sacred and secular rituals, the aborigines paint the bodies of the performers with designs either in coloured ochres, or with eagle-down using human blood as an adhesive. These designs are usually abstract, but, sometimes, along the northern coasts, representations of the totemic animals are painted on the bodies of the actors. During the burial rituals, particularly those of northern Arnhem Land and Melville Island, the men and women spend many hours painting their faces and bodies with the most elaborate patterns. The fundamental reason for these body paintings is not decoration, but concealment, so that the spirit of the dead will not recognize the living, especially near relatives.

Tools and Weapons

The aborigines have few tools or weapons which are large enough for extensive decoration, only the soft-wood and bark shields offering much scope for the aboriginal artist. Some of the shields from Queensland and central Australia, decorated in the soft harmonious colours of red, yellow and white ochres, are objects of real beauty. The smooth surfaces of the bark shields of southern Australia also provided the aboriginal craftsmen with a medium on which they engraved many complex and attractive designs. When the engravings were complete, the artist filled them in with white paint, making the designs stand out in strong contrast to the body of the shield. Spearthrowers, boomerangs and even the carrying dishes of the women were either painted or engraved.

Coffins and Burial Poles

Perhaps the most striking decorated objects are the log coffins of Arnhem Land and the burial poles of Melville Island. The coffins, up to eight feet in length, in which the bones are placed at the completion of the burial rituals, are painted with abstract and naturalistic motifs indicating the totemic group of the dead man. A grave on Melville Island, sometimes surrounded by as many as twenty decorated poles ranging from eight to twenty-five feet in height, is one of the most colourful sights in the aborigines' culture. The abstract patterns on these poles are purely the invention of the artist; they have no reference to the dead person.

Ceremonial Objects

In central and northern Australia, where the ceremonial life is still more or less intact, we know that the engraving and painted designs on the sacred objects describe, in primitive symbolism, incidents in the creation myths. Although the motifs on these sacred objects consist of little more than circles, spirals,

meandering and straight lines, their arrangement is always well-balanced and decorative in form.

Skin Rugs

When Europeans first reached southern Australia, every aboriginal man and woman wore a rug made from the skins of small marsupials, the inside of which was covered with a maze of finely engraved abstract patterns. Although, in those days, there were many thousands of decorated rugs, only one complete rug and a fragment of another remain.

Sculpture

Until recently it was thought that the aborigines did not carve figures of men and women in the round. Recent investigations, however, have shown that this art is widespread along the northern and western coasts of the continent. Some of the carvings in stone, particularly of the male sex organ, are undoubtedly of great age, although the evidence suggests that most, if not all of the wooden sculptures have been cut with steel tools. Nevertheless, the fact remains that sculpturing in wood with steel tools is an indigenous art which has developed without the stimulus and, in most examples, without even the knowledge of the white man.

In summary, we can say that the art of the aborigines is a vital part of their life. By its means they satisfy their aesthetic urge to produce objects of beauty. It is also a medium by which they have been able, in association with the tribal story-tellers, to keep alive, from generation to generation, the myths and beliefs of the tribe, and in some places to ensure, by both art and magical procedures, that the plants, the animals and the natural forces shall follow their appointed rhythm.

Even though on some occasions, the art of the aborigines may be purposeful, that is, intended to record a myth, or decorate an implement, or at other times, purely an activity to satisfy an artistic urge, these primitive artists always gain a great deal of pleasure from their efforts. To see a group of aboriginal artists painting a design on the ground, decorating a burial pole, or a companion for a dance, and to notice the quiet air of contentment that pervades the primitive outdoor studio, is to be convinced that each one of them is experiencing the pleasure which is the lot of every creative artist.

The motifs of the aborigines are few, their mediums and colours limited and their tools inadequate, yet each decorated object possesses the same sense of balance and design that characterizes all good art, primitive or modern.

DISCUSSION

MRS. MURRAY GRAHAM: May I ask if the aborigines are dying out?

THE LECTURER: Yes, they are. This is the result of the contact between an advanced and dominant civilization such as our own, and the simple mode of life of the aborigines. A number of them cannot make the adjustment, although many of them do. Some of the administrators of the aborigines have, during the past fifteen years or more, made the lot of the aborigines much easier.

MR. A. POWIS BALE: I have not been in the aborigine country, but I have met a number of them in the older districts in Western Australia, where, as I understand

it, the aborigine has suffered from his contact with the white man, and where, for that reason, it is a penal offence to let them have liquor of any sort. I should like to know whether the lecturer considers that there is much difference between the intelligence of these people in Western Australia, the 'abos' as they call them, and those who live in the true aborigine's country.

THE LECTURER: I do not think that there is any great difference, if any, between the mental level of the aborigines in any part of Australia, nor, for that matter, between the peoples in any part of the world. Each group of people is trained to live in its own environment, and in its own culture.

Some groups, such as our aborigines, are living more simply than others, but the simple method of gaining a livelihood does not indicate a low intelligence. For instance, I showed you in the film how the aborigines of the deserts of Central Australia use only five tools to gain a livelihood in that particularly inhospitable environment. But this is not an indication of a lower intelligence, but simply that the desert aborigines, whose life is one of continuous movement, have learned how to gain a livelihood with this particularly limited equipment. This fact, I would think, would indicate a higher intelligence than if they had used, say, ten tools to achieve the same result.

MRS. HOWISON: Do they all talk the same language?

THE LECTURER: No, I understand that there are four distinct language groups, each fundamentally different from the other. Yet the people who use these different languages are all, basically, aborigines. This is one of the many problems that face the students of aboriginal life.

MR. C. A. F. DUNDAS, C.B.E.: As well as the difference in language groups, are there any parallel racial differences?

THE LECTURER: No, as I said previously, there are no wide physical differences between the aborigines in any part of Australia. Some anthropologists separate the aborigines into two physical types, but they both spring from the same basic aboriginal stock.

MISS DIANA M. LALL: Could Mr. Mountford account for the ease with which the aborigine seems to be able to learn a modern European kind of art showing perspective? Many of the drawings I have seen by children, and adults too, for that matter, display an extraordinary standard of realistic representation.

THE LECTURER: I cannot explain why the aborigines, particularly in Central and Southern Australia, display this extraordinary ability to portray the flora, the animals and man so realistically, when their indigenous art is so highly formalized. I have in my collection a number of particularly well drawn and spirited drawings made by the aborigines of Central Australia, who have not received instruction of any kind.

MR. DONALD J. FINLEY: I think Miss Lall was referring particularly to works such as those of Albert Namatjira and the Arunta artists. If Rex Batterbee had not come to the area and shown his paintings, do you think any of the tribesmen would have developed a naturalistic style? I do not think they would. I believe it was purely imitative.

THE LECTURER: I cannot agree with Mr. Finley that Albert Namatjira's work is an imitation of Rex Batterbee. Undoubtedly, Namatjira's work was influenced by Batterbee's teaching, in the same manner as the work of European students is moulded by the influence of the particular school in which they are trained. But, when Albert is painting, he is not consciously imitating Batterbee, even though he is painting in a similar style to his tutor. Namatjira is an originally-minded artist, with a strong sense of the beautiful.

A number of the younger aboriginal artists, not trained by Namatjira, are using

a more symbolic style in their paintings. Although the missionaries contended that these paintings had no commercial value, Batterbee persuaded these young artists to paint in the style that they desired. Most of these artists have been able to sell all the pictures that they have painted.

MR. P. K. SHAHANI: During the course of his lecture I believe the lecturer stressed that the myths of the aborigines were closely connected with the contours of their landscape. Geologists tell us that topographical details constantly keep changing. Does the lecturer feel that the myths of the aborigines have also changed in the course of the geological changes?

THE LECTURER: The geology of the aborigines would, I imagine, have become stable long before the aborigines reached Australia, and it is doubtful if there has been any appreciable change since that time. But, as myths are part of the living culture, I feel sure that, if the topography has changed, the myths would also have changed. Similarly, if a group of aborigines voluntarily migrated from one place to another, they would take their myths with them and fit them into the new surroundings.

This change is also evident in the art. At Ayers Rock, for instance, there are many formalized cave paintings which are characteristic of Central Australia. Yet in the same caves are simple but naturalistic cave paintings of the white man and his activities—shooting bullocks or emus, or riding horses or camels. In one example, the aboriginal artist, not knowing how to draw a horse, depicted a kangaroo on four legs with the rider on his back. These modern paintings at Ayers Rock are excellent examples of how a living art tends to keep up-to-date.

MR. SHAHANI: In the aborigine art we have just seen, I noticed a frequent use of brown colour. Would the Lecturer attach any special significance to that?

THE LECTURER: I do not think that the colour of the ochre used in the painting to which you refer, had any special significance. This particular ochre was not, according to the aborigines, of a high quality. Some ochres, however, are specially valuable, the aborigines making long journeys to obtain them for their secret rituals.

MR. ALASDAIR ALPIN MACGREGOR: The number of aborigines one meets in the Australian deserts who have a smattering of English is quite astonishing. They have acquired through contact with such institutions as the Presbyterian Mission at Ernabella. On occasions when I have been lost and a long way from water, they have promptly answered my mimes with phrases like 'Ah! Water! Water!', and have then directed me to it.

Another thing I discovered when traversing the vast sands of the Northern Territory was the aborigines' sense of humour. We were looking for the site of the Old Elsey Station, in the Roper River region, familiar to those acquainted with Mrs. Aeneas Gunn's classic, *We of the Never-Never*. It was found for us by an 'abo' who had been employed there as a boy by the Maluka himself, early in the present century. By feeling with his bare feet, he located it beneath the desert sands, and proceeded to uncover a tiny piece of the brickwork foundations. I thought this so wonderful that I tried to get him to leave his foot on it for a second or two, so that I might photograph him unmistakably on the site of this historic homestead. When I had adjusted the foot to suit my requirements, he turned to my friend and commented, *sotto voce*, in English, 'Properly funny b——! Properly funny b——!'

THE CHAIRMAN: May I on behalf of you all thank Mr. Mountford very much for this evening, and also wish him a pleasant journey home. Please make the return journey very soon!

A vote of thanks to the Lecturer was carried with acclamation and, another having been accorded to the Chairman upon the proposal of Sir Selwyn Selwyn-Clarke, the meeting then ended.

SAFETY IN PARAFFIN OIL HEATERS

A FOTHERGILL PRIZE ESSAY*

By E. C. SIMPSON, G.I.Fire E.,
London Fire Brigade

Past years have seen too many fatal accidents caused by paraffin heaters of one type or another. Usually some one knocks over a stove, or an attempt is made to fill one while it is alight; such are common causes of fire with these appliances. Manufacturers should tighten up the designs of these stoves in order to incorporate safety factors and in some cases to add modifications giving an additional degree of safety.

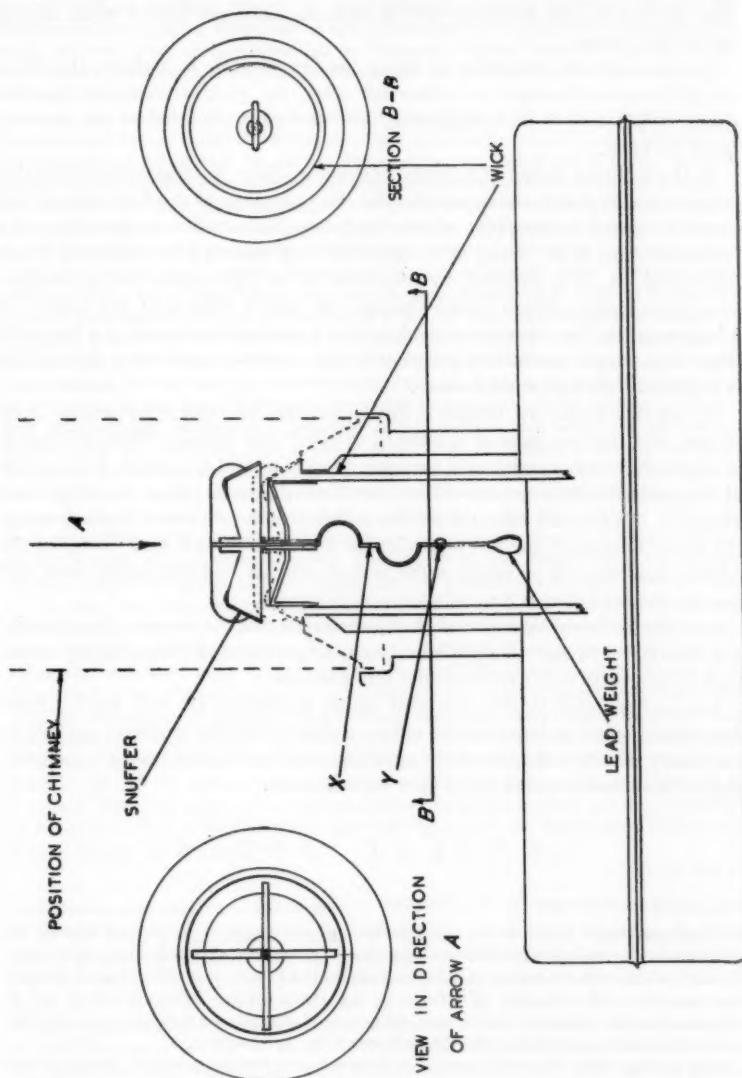
Two main types of heater are available: the convector or space heater, and the radiation heater. The former type is of necessity tall in order to accommodate the convector flue over the flame and the baffles at the top which distribute the heat. This height is the main disadvantage of the type, because it means that it can quite easily be knocked over, either by a glancing blow, or as a result of a very young or very old person lunging at the heater for support when they are tottering or losing their balance—in which case the stove topples over, and the paraffin spills and is ignited by the flame.

The radiation type is more stable and not so easily knocked over. The reservoir is removed from the stove for filling, the drip feed being ample to keep the stove alight during refilling operations, which can be carried out in the open air. If the valve of the reservoir is faulty, however, trouble with overflowing fuel can ensue. In this type of heater manufacturers have made the valves reasonably safe.

In using convector-type heaters, people are apt to fill the reservoir while the stove is still alight, and so any spillage of paraffin can easily catch fire. Another danger with both types of appliance is courted by carrying the heater from room to room while it is still alight; often, as a result, the paraffin is spilled either by the carrier tripping and dropping the stove, or because the reservoir is overfilled or leaking. I think that a large notice should be affixed to all types of paraffin heater, in a prominent position, warning users of the danger of moving lighted heaters.

To avoid some of the dangers of convectors, manufacturers should make changes in the design of their heaters. Firstly, the base should be larger than the top. Attractive designs could be made in this way; for instance, by making one to look like the Eiffel Tower: the sides of the heater sweeping up from the wide base to a narrow neck at the head of the chimney, and two or three mushroom louvres at the top which would distribute the heat all round. Alternatively,

* For this essay Mr. Simpson was awarded a Fothergill prize of £10. For details of the results of this year's Prize Competition, see page 791 of this issue.



feet at the base of the conventional type of heater could be mounted on swivelling legs, which would increase the base area but be adjustable to any position so that the feet do not protrude and become an additional hazard when anyone passes the heater.

To eliminate the possibility of filling the heater while it is alight, the filling should be done through the orifice left when the wick is removed; thus the heater would have to be extinguished, and allowed to cool, before the reservoir could be filled.

In the sectional sketch of a typical convектор heater, a suggested modification is produced in detail which provides for the extinction of the flame should the heater be jarred to the point of overbalancing. The snuffer, in the shape of a truncated cone, is so shaped as to cover the wick when it (the snuffer) is in the lower position. It is attached, by two vanes set at right-angles to one another, to a central stem, which passes through the centre aerator of the heater, in a hollow guide. The central stem is shaped to a semicircle and ends in a face at X. The lower tripper mechanism pivots at Y, has a semi-circular set at the top and is weighted with lead at the bottom.

To set this device the snuffer is lifted clear and the tripper allowed to come to rest, and the two faces at X allowed to come into contact. When the heater is alight the warm current can continue to rise around the inside and outside of the snuffer without any restriction, but if the heater is jarred the weight will swing the tripper, and allow the snuffer to fall over the wick and thus extinguish the flame. Because of the two semi-circular sets in both the central stem and the tripper, any rebound or swing of the tripper will not foul the snuffer stem and jam the snuffer before it has completed its journey.

It might be found by experiment or experience that the weight of the snuffer was insufficient to carry it right home, and the provision of a light spring would then be necessary to force the snuffer into position.

Let us hope that in the very near future manufacturers will make a most determined effort to improve the safety of their otherwise excellent appliances and finally eliminate the risk of the appalling injuries which many have suffered, and of those deaths which could have been avoided.

G E N E R A L N O T E S

ROMANESQUE EXHIBITION AT MANCHESTER

There are times when some early period of art ceases to be almost wholly the province of devoted antiquarians and assumes in some sort a contemporary relevance. To-day, when current international idioms again hold sway, it is absorbing to observe the mingling and diffusion of strains in the Romanesque efflorescence of art in Western Europe, traceable in the rare collection of illuminated manuscripts, carvings and metalwork assembled at the Manchester City Art Gallery.

It is strange that this collection of a hundred and twenty precious items, drawn from British and Irish sources and covering the post-Norman Conquest period to the turn of the thirteenth century, is actually the first exhibition of the Romanesque style to be held in this country. It is also salutary for Londoners to be reminded that

the foremost artistic enterprises in the land are quite liable to be born outside their metropolis. Though this collection seems unlikely to come south, students of medieval art will feel as indebted to Dr. S. D. Cleveland, and his colleague Dr. C. M. Kauffmann for making Manchester this golden autumn a centre of Romanesque study, as they were earlier beholden to Professor Talbot Rice for organizing the resplendent Edinburgh exhibition of Byzantine art which London was afterwards privileged to see.

Indeed, as we know, Byzantium provided one of the main streams fertilizing the Romanesque style, influencing its monumental and hieratic qualities, and introducing the method of modelling figures in illumination by means of clinging folds to emphasize the muscular structure of the body beneath the robes. As the name implies, Romanesque art drew inspiration also from the heritage of Rome, and such twelfth-century illustrations here as those of the *Comedies of Terence* from the Bodleian, or the *Antiquities of Josephus* from Cambridge, clearly derive from classical sources.

In the compass of a single spacious gallery, the English stone carvings could comprise little more than some fine corbels and capitals. But there is a vigorous relief of three devils carrying off the soul of a dead man, deeply carved in a tympanum fragment from York and indicating the transition to Gothic art, and elsewhere an intense head of Christ with prominent staring eyeballs characteristic of much Romanesque carving and illuminated miniatures. A French carving in walnut here of a Virgin and headless Child tugging open the neck of her dress conveys a sense of that other-worldly vitality and grandeur which endows the finest twelfth-century figures, and which Henry Moore alone seems able to command to-day. As in the Byzantine exhibition, the small reliefs in ivory or bone hold one for the multiplicity of lively detail often seeming to swell out beyond the confines of the panel yet never detracting from the central motive. Nowhere is the Romanesque feeling for monumentality on the tiniest scale seen more impressively than in a casket fragment in gilt bronze of the three sleeping warriors from the Resurrection—ponderous effigies under four inches high yet aggrandized in imagination to four feet.

Yet, *pour tout dire*, the great glory of the collection is the wealth of illuminated manuscripts, with the Bury, Dover, Lambeth and Winchester Bibles as cornerstones of the twelfth-century achievement. Particularly magnificent is the Bury Bible, the earliest of these English twelfth-century Bibles, and most beholden to the Byzantine in the austere humanity of the figures and solid richness of colour veined with the arabesques of garment folds. Artists, especially, have been poring over these masterpieces of illumination gathered together for the first time. The linear pattern of scrolls in the robe of the scribe Eadwine, decorating that famous page of his Psalter; the figures darting like dragonflies within roundels of gilt and blue in the Lambeth Bible; or, again, the concentration of expressive gazes in the line illustration of Maccabees by the Master of the Leaping Figures for the Winchester Bible—what a consummate artistic legacy it is.

NEVILLE WALLIS

THE DEVONSHIRE HUNTING TAPESTRIES

At the Victoria and Albert Museum the gallery of medieval tapestries has been newly adapted to accommodate the great tapestries of hunting scenes, dating from the first half of the fifteenth-century, which were acquired by the nation from the estate of the tenth Duke of Devonshire in 1957. The gallery (room 38) is equipped with a ventilating system that regulates the cleanliness and humidity of the atmosphere, so that the tapestries can be shown on the walls without the protection of framing or glass. Daylight, harmful to these delicate textiles, is excluded, and though the suggestive chiaroscuro which would, one imagines, have lurked in them by restless torchlight, is missing, the present-day artificial illumination (fluorescent and tungsten) is even, soft and clear, removing all sense of strain from even prolonged study. This

is, perhaps, more agreeably to be indulged from a distance, since much of the detail—particularly in the 'Boar and Bear Hunt' and the 'Roe Deer Dunt'—is repulsive in its attention to the bloody results of the chase.

The last-named tapestry was washed and restored in Paris in 1947; the 'Boar and Bear Hunt' has lately been restored, and its original tones revived, at the Stichting Werkplaats tot Herstel van Antieke Textiel in Haarlem, where the fourth tapestry of the set, representing Falconry, is still in process of similar renovation. This absent tapestry, described by the museum authorities as the most important of the four, is associated with the marriage of King Henry VI to Margaret of Anjou, who is believed to be portrayed in the scene. Obviously the quality of this work cannot properly be judged from the photographs on view, but it is at least permissible to observe that here the artist-designer has been at pains to distinguish the faces and expressions of the *noblesse*. A just degree of *hauteur* is conveyed in each, but it is not the fixed and formal mask worn by their contemporaries in the other tapestries, and these great ones regard the slaughter proceeding around them less impassively. If it indeed be Margaret of Anjou, just so, surely, might she have looked at Wakefield.

The Devonshire tapestries were woven at Tournai. In the adjoining sections of the gallery are displayed three of the sumptuous allegories on themes derived from Petrarch's *I Trionfi*, produced at Brussels in the early sixteenth-century, together with other Gothic tapestries from the Museum's collection. The ensemble well realizes its expressed intention—that it should cause the spectator to feel himself in a room furnished with 'costly arras', and able 'to lose himself in the stories of the figured scenes'.

'PICK OF THE PACKS'

Under the title 'Pick of the Packs', the Design Centre is for the first time exhibiting a selection of well-designed British packs in current use. The exhibition has been arranged by the C.O.I.D. in co-operation with the Packaging Group of the Society of Industrial Artists, and the selection has been made by a panel under the chairmanship of Mr. Ashley Havinden. Their choice includes a high proportion of packs from the food and drink industries, thus reflecting the great increase in the volume of foodstuffs now sold by self-service stores in this country—a development discussed in the paper on 'Packaging Progress' recently read to the Society by Mr. Milner Gray (*Journal*, August, 1959, pp. 622–35). The exhibition remains on view at the Design Centre, Haymarket, until 7th November.

'BUSINESS HISTORY AND BUSINESS RECORDS'

On 26th November the Business Archives Council is holding a special winter conference under the title, 'Business History and Business Records'. Proceedings will begin at 3 p.m. in the Chartered Insurance Institute, 20 Aldermanbury, London, E.C.2. The speakers will include Dr. T. C. Barker, Mr. Cyprian Blagden, Mr. H. A. L. Cockerell and Mr. J. Wadsworth. Tea will be served at 4 p.m., after which there will be time for further discussion, and an opportunity to see the Museum of the Chartered Insurance Institute. Fellows of this Society are welcome to attend the Conference; those who would like to do so should apply to the Secretary of the Business Archives Council, Miss I. Shrigley, at 9 King's Bench Walk, Temple, E.C.4.

The Council, which is managed by a committee of industrialists, economic historians and business archivists under the presidency of the Master of the Rolls, has recently prepared a pamphlet on 'Methods of Listing, Indexing and Reporting on Business Archives'. Copies may be obtained at the above address from the Secretary, who will also answer inquiries about the Council's membership and activities (which were briefly described in the February, 1959, *Journal*, pp. 415–16).

THE MANCHESTER BUILDING CENTRE LIMITED

It is announced that the Manchester Building Centre Limited has been formed, with the support of the Building Centre, London (to which it is affiliated), and with similar objects: namely, the provision of facilities for manufacturers to exhibit products used in the design and equipment of buildings, so that architects, engineers, builders and members of the public can see in one place a representative and up-to-date selection. An unbiased information service will be provided, and there will also be space for the holding of lectures and visiting exhibitions. It will not be possible to buy or order goods at the Centre, whose sole source of income will be from the letting of space to exhibitors.

Correspondence about the Manchester Building Centre Limited is being dealt with by its Director, Mr. John P. Griffiths, at his temporary office in the Department of Building, The College of Science and Technology, Sackville Street, Manchester 1.

'CHESS THROUGHOUT THE CENTURIES'

In connection with the next Olympiad of Chess (the World Championship for Chess Teams), which will take place at Leipzig from 16th October to 9th November, 1960, an international exhibition is being arranged to give a comprehensive survey of the history, development and importance of the game. The organizers of the exhibition (XIV.Schach-Olympiade, Vorbereitendes Komitee, Leipzig CI, Postfach 504, German Democratic Republic) have issued an appeal to federations, players and lovers of chess, to lend interesting or rare material for inclusion in the display. Among the principal types of exhibits required are chess-men, boards, tables, and clocks, printed material and statistical material, manuscripts, paintings and sculpture germane to the subject. Those who would consider responding to this invitation, or who are prepared to offer help and advice in locating items of special interest, should get in touch with the President of the Organizing Committee at the address given.

O B I T U A R Y

We record with regret the deaths of a former Vice-President and a Fellow of the Society.

SIR HENRY TIZARD

Sir Henry Thomas Tizard, G.C.B., A.F.C., F.R.S., formerly Rector of the Imperial College of Science and Technology and President of Magdalen College, Oxford, died on 9th October, aged 74. He was a Vice-President of the Society from 1929 to 1932, and served again on the Council in 1935-6. In 1944 he was awarded the Society's Albert Medal in recognition of his services to aeronautics.

The son of Captain T. H. Tizard, R.N., one-time Hydrographer to the Admiralty, Henry Tizard inherited aptitudes for science and engineering from both sides of his family. He was educated at Westminster and Magdalen, where he was a demy and read mathematics and chemistry, winning first-class honours in each. After study at Berlin under Professor Ernst, and a period at the Faraday Laboratory of the Royal Institution, in 1911 he entered upon what promised to be a long and distinguished career as a don at Oriel. The First World War, however, during which he served in the R.F.C. and became Assistant Controller of Experiments and Research for the R.A.F., gave him his first major experience of scientific direction and awakened his interest in aircraft development. In these two fields, during the rest of his life, he was to be chiefly occupied.

In 1920 Tizard was appointed Assistant Secretary of the Department of Scientific and Industrial Research, then in its infancy. In this capacity, and subsequently as Secretary of the Department (1927-9) he did work of outstanding importance in the

application of scientific knowledge to problems of defence—work which he continued, as a member of governmental advisory committees, throughout his years as Rector of the Imperial College. Most significant of all perhaps, in view of his own first-hand knowledge, and prescience of war, was his contribution to the decisions made by the Aeronautical Research Committee (of which he had served as a member since 1919, and as chairman from 1933–43) and by the Air Council. His influence was not simply that of the expert. He had to a high degree the gift of analysing situations or difficulties and of expounding the issues in clear-cut terms, so that all concerned—airmen, laymen, officials, scientists—were affected by a sense of common purpose and urgency.

The desirability of continuing to draw on Tizard's ability in the national interest was the reason why his term as President of his old college proved a comparatively short one. He was elected in 1942; four years later he was once again called out of academic life, this time to assume the double responsibilities of chairman of the newly instituted Defence Research Policy Committee and the Scientific Advisory Committee. Until 1950 he was also Scientific Adviser to the Ministry of Defence. Tizard's energetic leadership in carrying out these tasks fully maintained his reputation, and when in 1952 his health, never reliable, compelled him to relinquish them, his absence was keenly felt.

Tizard was made C.B. in 1927, K.C.B. ten years later, and finally advanced to G.C.B. in 1944. He was a Trustee of the British Museum and an Honorary Fellow of both the Oxford colleges he had served. Amongst the numerous academic and professional distinctions he received, one may be singled out for mention here in addition to the Albert Medal: the award to him, in 1946, of the Gold Medal of the Franklin Society of Philadelphia.

MR. T. E. GOLDUP

Mr. T. E. Goldup, C.B.E., a director of Mullard Ltd., the radio engineers, died on 6th October at the age of 65.

Educated for the Royal Navy, Goldup spent his early and formative years in that Service. During the latter part of the First World War he was wireless officer of the Portsmouth Trawler Division, and in 1920 was appointed senior experimental officer at the Signal School, Portsmouth. This experience decided the course of his civilian career. He joined the Mullard Company in 1923 and became responsible on its behalf for the manufacture of transmitting and receiving valves for the government. Later he was appointed to establish a technical service department for the company, and his success in developing this led to further promotion within the company and to a wide personal reputation in the radio industry as a whole. Goldup was made C.B.E. in 1954, and in the same year he was elected a Fellow of the American Institute of Radio Engineers 'for his pioneering achievements for the design and development of thermionic tubes and his contributions to the technical and administrative achievements of the British Radio Industry'. He served as President of the Institution of Electrical Engineers in 1957–8.

Mr. Goldup was elected a Fellow of the Society in 1950.

NOTES ON BOOKS

THE SIXTH SENSE. By Rosalind Heywood. London, Chatto & Windus, 1959. 21s net

THE MIND READERS. By S. G. Soal and H. T. Bowden. London, Faber & Faber, 1959.
30s net

'What it all comes to is this,' Mrs. Heywood says: 'Evidence has been produced that man is a creature who can make contact with distant events by an unknown process, which does not involve the use of sight or hearing or touch or smell, and which

to some extent at least is independent of time'. *Psi*, she says later, is now widely used as a blanket name for the psychic in general, and extra-sensory perception (ESP) is that form of the *psi* faculty with which this book, 'a short non-technical study', mostly deals. ESP is not a sort of mental radio transmission; and the findings of psychical research are not a matter of mysticism (though some of Mrs. Willett's remarks do remind us of the mystics: 'It's so heavenly to be out of myself—when I'm everything, you know, and everything else is me') or poetry: they are thoroughly down-to-earth and their interpretation calls for almost superhuman impartiality and detachment.

Mrs. Heywood ranges in her scholarly style over many *psi*-phenomena: possible survival after death; mediumship; 'cross-correspondences'; qualitative and quantitative experiments (card-guessing among the last). She discusses why *psi* has been so obstinately ignored until recently (Kelvin and T. H. Huxley were among the most obdurately incredulous); and opposes to them the names of notable people, 'eminent heretics', who were at least prepared to be persuaded: Sidgwick, Myers, Verrall, Butcher, Leaf, Oliver Lodge and Gilbert Murray (Murray's qualitative experiments in telepathy are indeed 'entralling'). Research into this strange faculty is still at a very early stage, and the laws which govern it are not known; it is of little practical value, being elusive, sporadic and unreliable. It is possible that ESP has to evade some 'censorship', and that the brain may be, as Bergson thought, an organ of limitation, to protect us from too great glory or too intolerable horror (one should compare 'the terrifying sense of disintegration under excess of experience which can be induced by . . . mescaline or lysergic acid'); and that our language may be an unsuitable tool to deal with *psi*. One has also to allow for the love of drama and astuteness of the subconscious, and what Murray called its slipperiness. This is an important and stimulating book, which will help to make a full man. The author is not trying to convince; she is pleading for an open-minded approach—or at least for an approach, with as much scepticism as one likes, unclouded by apathy, prejudice or fear. She quotes some remarkable words addressed by Sir Alister Hardy to the British Association in 1949, which, she says, were not derided, denied or ignored to the extent that similar observations had been in the past: 'If telepathy has been established, and I believe it has, such a revolutionary discovery should make us keep our minds open to the possibility that there may be so much more in living things and their evolution than our science has hitherto led us to expect.'

Dr. Soal's book is an account—a very detailed account, and one cannot do it justice in a short review—of a series of experiments in card-guessing, 'a boring and monotonous occupation', between August, 1955, and April, 1957, with two 'unruly and very intractable' Welsh boys, thirteen years old in 1955, with whom Dr. Soal had been intimate from their earliest years (Dr. Soal was not present at all the experiments): Glyn Jones ('spoilt and aggressive'), usually the 'percipient', and his cousin, Ieuan Jones ('repressed'), usually the 'agent'. The methods and different conditions used (indoors at the boys' home and at the headquarters of the Society for Physical Research, and out of doors—'definitely more successful than . . . indoors'—at home and on the playing field of St Paul's School), at distances from a few feet up to 166 ft.; a few experiments with one or the other boy hypnotized; and the precautions taken against the possibility of cheating by anyone, including, of course, and with justification, the boys themselves, are interesting, and the results are astonishing.

ESP will not work to order, and so while results were obtained, the odds against whose achievement by chance were 10^{38} to 1, and one in which 'the odds were so astronomical that it is better not to attempt to give a precise figure' (20 per cent of correct guesses is about what would be expected 'by chance' from someone trying to guess each card in a pack of 25 made up of 5 sets of 5 identical cards), some of them were of no significance at all, and it proved impossible to define what conditions

produced success, and what failure. As to random samples and probability, too, Mr. A. J. Moakes, of St. Paul's School, who assisted at the experiments mentioned above, says, 'The world with which mathematics deals is abstract, and the application of mathematical concepts of probability to actual life has never been satisfactorily settled.'

The debate continues, and anyone who wishes for a view of the latest developments might care to read an article by the sceptic Mr. C. E. M. Hansel (mentioned by Dr. Soal) in *The New Scientist* of 26th February, 1959, and the correspondence in the issue of 26th March.

HUMPHREY HIGGINS

ENGLISH FURNITURE DESIGNS OF THE EIGHTEENTH CENTURY. By Peter Ward-Jackson. London, Her Majesty's Stationery Office, 1958. £3 3s. net.

A museum's duties to students receive considerable public attention to-day. Always it is difficult for the authorities to strike the right balance between service to the general public and recognition of the more exacting demands justifiably made by those who wish to draw upon the museum's fullest resources. A book recently published by the Victoria and Albert Museum prompts one to hope that it may be followed by others in like vein. Frequently—and most welcome—the Museum issues booklets and illustrated catalogues lightly touching on subjects of general interest, briefly introduced, briefly captioned, to whip up interest in a notoriously lazy-minded public. But *English Furniture Designs of the Eighteenth Century* draws really comprehensively upon the Museum's library and print room to consider and collate in a systematic survey one of the largest existing collections of prints and drawings on a theme that is notably popular to-day. This large and excellently produced book offers 396 reproductions of such prints and drawings—over 280 pages of bookcases, desks, mirrors, dressing tables, sofas, wall lights, knife boxes and the like, chosen to show as fully as possible the different types of furniture made at the period, although the author admits that probably many of the more elaborate projects were never carried out. Draughtsmanship ranges from Lock's intricate rococo imagery to such fine Adam detail as an organ for Lord Bute and a clothes press for Lord Coventry; it includes minor contributions from such unfamiliar work as John Crunden's *Joyner and Cabinet-Maker's Darling* (1765) and a number of peculiarly vivid drawings from the Museum's considerable collection by John Linnell.

Such a book is fascinating for leisure-hour browsing, but its purpose is to set on record the data possessed by the Museum on this intriguing theme, including a reasonably full bibliography of the principal eighteenth-century pattern books containing furniture designs. This is an invaluable service, since the Museum contains nearly all the relevant pattern books, some very rare, and a considerable number of original drawings, which tend to be still rarer. The catalogue details more than forty names and some anonymous work.

Even the most familiar, such as Thomas Sheraton, are represented by some lesser known examples and may be viewed afresh in their contemporary setting, among rivals, leaders, plagiarists, and in conjunction with the notes on the artists which show the extent to which design and practical construction had become separate activities. It is pleasant to see Thomas Chippendale reinstated as a major contributor, although the author considers it is impossible to determine whether he inaugurated the marked change of fashion that coincided with the publication of the new and ingenious *Director*: the currently popular hypothesis that Chippendale was an unscrupulous self-advertiser taking credit for the work of the obscure artist Copland is dismissed by the author as requiring much stronger proof. Robert Adam, who 'probably designed more furniture than any other architect', is recognized unequivocally as far in advance of his Continental contemporaries.

Mr. Ward-Jackson seeks to clarify the major moods of the century, stressing that

the ornament of ancient Greece and Rome is the main strain in all the designs in the book, no matter how strangely disguised. He traces such influences as the Chinese, common to all Western Europe, and the purely English Gothic, and contrasts in some detail the French and English appreciation of what eventually became known as the rococo style, asserting that in France the movement was a gradual growth whereas in England it was a passing fashion, casually taken up and laid aside. He thus explains the English tendency to exaggerate a few more obvious motifs and ignore such subtler manifestations as graceful linear patterns and slender bandwork borders. He refers especially to the delicate designs of Matthias Lock, reproducing some of the 200 original Lock drawings in the Museum. Lock, he points out, introduced idiosyncrasies rarely found in Continental rococo design, including such essential features of English mirror frames as the slender colonette with base and capital of concave plan. Mr. Ward-Jackson writes with the knowledge of Continental work that enables him to distinguish, for example, Langley plagiarisms of Lauch or Pineau, and in the authoritative tone justified by the magnificent fund of Museum evidence available to illustrate his pronouncements.

G. BERNARD HUGHES

MEDICAL BIOLOGY AND ETRUSCAN ORIGINS. A CIBA Foundation Symposium. Edited by G. E. W. Wolstenholme and Cecilia M. O'Connor. London, J. & A. Churchill Ltd., 1959. 45s net

Since the war, the enormous increase in archaeological research in Europe has been characterized by a fortunate and ever-growing readiness on the part of archaeologists, anthropologists, ethnologists, and even straightforward historians, to co-operate with their colleagues in natural and applied sciences. Nor have the benefits been all one-sided: whilst, for instance, the archaeologists have gained enormously by the application of techniques involved in the laboratory and the battlefield, those concerned with such fields as medical biology and genetics have been demanding information on early folk-movements, population figures in prehistoric times and the incidence of racial mixture.

In no field is this better demonstrated than in the scholastic quagmire of Etruscology. Technically, Sr. Lerici's photographic drilling of the tombs (borrowed from oil prospecting) is a striking instance. The age-old problem of the origin of the Etruscan people in the Italian peninsula—native substratum, invaders from the north, or Western Asiatic colonizers—is the latest aspect to be marshalled for scientific dissection. In this volume, the report of the Ciba Foundation's fiftieth symposium, the full title was 'The recent contributions of medical biology to ethnology: with special reference to the origin of the Etruscans', and the names of Hencken, Bloch and Ward Perkins on the archaeological side, with Mourant on the genetical, will at once command the attention of European prehistorians to the proceedings.

The sixteen papers, introduced and chaired by R. M. Cook of Cambridge, fall into two groups. The first ten cover the current ethno-historical theories of Etruscan origins, the nature of the Etruscan people, their way of life, population pattern, religion and language, with surveys of Etruscology and suggestions for future research along these lines. The remaining six, which will be hard reading for those unfamiliar with scientific techniques, evaluate, firstly, the use of various metrical devices in tracing genetical characters, by way of blood groups, human bone material, and other data, and then attempt to apply such methods to modern Italy and modern Italians.

The layman will be disappointed if he assumes from this bald summary that a firm historical conclusion is reached by the archaeologists and historians, and then substantiated from human data by the geneticists and medical biologists. To begin with, there is no real agreement amongst prehistorians, aided and abetted by linguists, as to where the Etruscans came from: an extreme view is that they did not come from anywhere, but were just there. To an archaeologist, the most balanced statement

is probably that of Hugh Hencken of Harvard (p. 45), where, having demonstrated Oriental and prehistoric Italian elements in certain unquestioned Etruscan tomb groups, he concludes that the Etruscans of history were a composite of Eneolithic people (*sic!* of Italy), the people of the Apennine Bronze Age, the Villanovans, the Greeks and the bringers of Oriental elements; were in fact a mixed population as much as the French (Gauls, Romans, Franks) or, one might add, the British, and that the process of mixture could only have taken place in Etruria.

Clinging to this life-line—and it is one of many recently offered (*vide* Bloch, *The Etruscans*, Thames and Hudson, 1958, at p. 189)—the reader can proceed to the scientific camp. The major question here seems to be, firstly whether racial elements can be detected to-day by blood-group surveys, and secondly whether human bones several millennia old can be made to yield precise evidence of the blood-groups of their former owners. The answer to the first part would seem to be that within limits, over wide areas, and given a number of basic pre-conditions, it is possible to indicate something of the kind, though introduction of, for instance, a few male adults with dominant genetic characteristics can change the genetic structure of a village population in time out of all proportion to the historical significance of the original intruders. The reviewer, an archaeologist unversed in biology, confesses himself unable to determine whether the second part of the question was ever really answered in this book: it appears that, if suitable specimens of bones in good condition can be found, it is possible, again with limits, to detect formations and malformations which can be correlated with hereditary genetic character.

The final discussion sounds a note of cautious optimism. If no real agreement has been reached, it is clear that the great value of the symposium as a starting-point, an essay in methodology, and an analysis of the pre-requisites for further study, has been fully demonstrated. One thinks in this instance of the British Museum (Natural History) report on the Piltdown skull, in itself as fascinating as an Agatha Christie story, but primarily a record of an immense step forward in the scientific detection of fossil human remains. The Ciba Foundation is to be congratulated on affording a platform for the Etruscologists and medical biologists to give us a progress report.

CHARLES THOMAS

THE JOURNAL OF MECHANICAL ENGINEERING SCIENCE. Volume I, No. 1, June, 1959.
Published by the Institution of Mechanical Engineers. Annual subscription rates:
 four issues, members £1 10s., non-members £3. Single copies, members 10s., non-members £1.

It is understood that the object of this new quarterly *Journal* is to provide an avenue of publication for papers and articles of a fundamental and scientific nature. It is not surprising therefore to find that the universities are strongly represented on its editorial panel.

The first issue contains nine papers, and all the authors either hold academic appointments or report work carried out in academic departments. As a matter of interest it may be noted that they are associated with seven universities, including four in England, one in Scotland, and two in the U.S.A. One of the papers is from the U.S.A., one from Scotland, the remaining seven being from England.

Broadly speaking, three of the papers describe investigations primarily experimental, the other six being analytical. All of the papers are of specialist interest and are concerned with fundamental investigations.

Considering the experimental papers first, we may note that one deals with an application of dynamic photo-elasticity to the determination of the stress concentration factor at a central transverse circular hole in a strut subjected to axial impact. By using a 'Fastex' camera or a microflash-camera combination, the authors have obtained well-defined fringe patterns, clearly illustrated in the paper, about the

geometrical discontinuity in the strut, and they indicate a method of interpreting these fringe patterns. Another paper describes the development of a capillary-type viscometer using the principle of the falling mercury pellet, and its use in the measurement of the viscosity of steam at pressures of the order of 200 to 1000 atmospheres and temperatures from 370° to 540°C.; it also carefully examines possible sources of error. A third paper reports on the effect of ambient static fluid pressure on the behaviour of alloy-steel specimens subjected to fluctuating direct stress and on a novel testing machine developed for the purpose of these tests.

On the analytical side, one paper offers a solution to the problem of hydrodynamic lubrication of highly-loaded elastic cylinders when all thermal effects are neglected. Another investigates the shrinkage pressures close to the end-point of contact in a shrink-fitted assembly loaded in torsion, and uses them to calculate the depth-of-slip. A third is an analysis, based on an idealized system, of instability and steady-state coupled motions in vibration-isolating suspensions. The three remaining theoretical papers deal with aspects of the vibration of rotating shafts. One develops a theoretical approach to systems possessing axial symmetry, though allowance is made for slight initial lack of straightness of the shaft. The next examines the motion of an unbalanced flexible rotating shaft and gives the underlying theory of a general method of balancing flexible rotors. The last shows how to find expressions for the receptances of flexible rotating shafts; since the behaviour of a mechanical system in vibration may be expressed in terms of its receptances, a knowledge of these quantities is of great value.

Format and style of presentation are generally similar to those used for papers published in the Institution's *Proceedings*. There is no editorial note or introduction to the new publication, nor is there any statement of policy. It may be surmised, however, that the *Journal* will be used as a medium of publication for papers not regarded as suitable for presentation at meetings of the Institution owing either to their predominantly mathematical content or to their restricted specialist interest. Papers of the nature and quality of those appearing in the first issue would no doubt previously have been published 'with written discussion only' in the Institution's *Proceedings*, and it seems clear that the intention is that the *Journal* shall maintain much the same general level of excellence.

LEROY A. BEAUFOY

THE WELFARE STATE IN NEW ZEALAND. By J. B. Condliffe. London, Allen and Unwin, 1959. 35s net

Professor Condliffe is the most distinguished historian of the New Zealand economy, though he has been an expatriate since 1927. In 1930 he published *New Zealand in the Making*, by common consent an excellent work, and till 1959 the only comprehensive economic history of the country. In 1957 he visited New Zealand as consultant to the Reserve Bank of New Zealand, and the visit has now resulted in the publication of two volumes of economic history: a revised edition of *New Zealand in the Making*, concerned principally with the period before the election of the first Labour Government in 1935; and the volume under review, *The Welfare State in New Zealand*, concerned principally with the period since 1918, but containing substantial accounts of the earlier history of some developments. There is not as much overlap as these dates might suggest, as a few subjects that have declined in importance are dealt with in the former book only, and some that have grown in importance are dealt with in the latter book only.

Nevertheless *The Welfare State in New Zealand* gives a well-balanced account of general economic history. The title is thus somewhat misleading. Only one of the eight chapters is avowedly devoted to the Welfare State. This chapter is almost entirely descriptive; it lacks the analysis and assessment of welfare measures that the title seems to promise. If the book has a dominant theme it is not welfare but State

regulation. In the period covered there has been a complex history of State intervention in the economy, beginning with the organization of controlled marketing of primary produce in the '20s, continuing with the series of desperate expedients that the Coalition Government tried during the Depression, then in the later '30s with the policies that Labour employed to promote social justice, and later still with war-time controls designed to increase economic efficiency, and finally taking the form of controls imposed to cope with intermittent balance-of-payments problems and the inflationary consequences of making full employment the central object of Government policy.

Professor Condliffe has produced a scholarly book, well planned, economically and lucidly written, packed with information, and well documented. For a New Zealander, *The Welfare State in New Zealand* is very valuable as a collection of miscellaneous economic information. For an overseas reader, the book provides a good overall picture of economic development. Such a picture will be of interest to students of the Commonwealth, to economists concerned with trends in the countries that are the suppliers and customers of the United Kingdom, and to all who are interested in the effects that welfare and planning produce in the laboratory conditions of an insulated economy.

K. J. SCOTT

THE PENROSE ANNUAL: A REVIEW OF THE GRAPHIC ARTS. Volume 53. Edited by Allan Delafons. London, Lund Humphries, 1959. 42s net

The editorial survey at the beginning of this volume is as full and masterly as one has come to expect in the Penrose tradition, and it can as always be recommended to anyone who requires a short statement of the present state, aesthetic and technical, of the graphic arts industry. Indeed, to adapt Oliver Goldsmith, when one thinks of the editor's task the wonder grows, how one small head can carry all he knows. How long will it be possible, let alone profitable, for anyone to assimilate the range of knowledge in so complicated a part of the giant communications industry, in which the problems a man at the top must try to solve range from the quasi-philosophical to the narrowly technical? That is the fascination of anything to do with communications (I import this orotund word from the U.S.A., where a Graduate Institute of World Communication has just been set up at the Pratt Institute, Brooklyn, N.Y.), that the receiving end, the human mind, and hence the product, the word, sound, or picture, is infinitely variable. Anyone in control in the industry, a tycoon to put it briefly, must then always be on the lookout to see how the new technical means can interact with possible ends. Hence the need for scholar-technicians and technician-scholars. Technical means will influence what the tycoon can publish as well as how he communicates it, and that will in turn determine, for economic reasons, to whom he can communicate his message. Thus, for instance, as the editor points out, the hunger of the underdeveloped countries for books and knowledge must be satisfied, and it cannot be done entirely by subsidies. The 'battle for men's minds' is a cliché, but it is important. Another facet is the 'talking book' described in this volume.

One can make a very rough and ready distinction between trends which designers in particular should watch and those which should interest both designers and tycoons. Taking the designers first, we have for instance in this volume the opening article by Mr. Edward Rondthaler, 'From the Rigid to the Flexible', in which he sets out to show the uses of photography when applied (not very convincingly in this case) to letter forms.

Both parties should note the continuing pre-occupation with photographic techniques, which is of great economic importance, as well as providing, in the editor's sonorous words, a 'release from the rigid rectangularities of traditional type and blocks', and which 'coupled with new methods of reproducing pictorial art and

the new non-metallic printing plates will compel those who draw, paint, take photographs, and design for graphic reproduction to attempt a new orientation of methods and of forms'.

Artists fortunately are showing signs of moving closer to the printing surface, in fact they are doing some 'printing' themselves, and they are correspondingly less afraid of the technicalities even of mass-produced print. This is one of the most invigorating aspects of graphic art to-day and it is having some influence on the barriers of the Art world. The act of making more than one of a thing is no longer by definition despised. Given the right artists and the right tycoons what could not be achieved? In America something is being achieved on these lines, as is shown by Fritz Eichenberg's article on 'American Artist-Printmakers'.

Union attitudes in these matters are likely to need to be flexible if the industry is to be prosperous and sensitive to worth-while influences at the same time. And it is up to management, as Mr. E. E. Butten writes in 'Microscope on Management', to turn a microscope on itself so as to be able to deal clearsightedly and firmly with such problems and to uncover profit-losing practices.

For the big business man, again, is the problem of colour in newspapers (ROP colour) and magazines. A new development is reviewed in the article 'Newsprint Applications of Web Offset Colour'. These matters must be weighed with the progress of colour television. Already T.V. advertising takes one-seventh of Britain's total of £335 million spent on advertising; on the other hand, advertising in magazines is still increasing and circulations of some have been maintained.

Getting towards the wider problems of communications, we have, as already mentioned, the talking book, described by Yasushi Hoshino. This arose from the difficulty of printing Japanese, and enables text, pictures and a printed sound track to be combined on the page.

Those, I think are this year's most interesting themes. Other personalities and points covered are Eric Gill, Bruce Rogers, Mrs. Warde on Australia, Mr. Mark Severin on Belgium, Mr. John Mason on paper-making by hand, nineteenth-century illustrators, company magazines, PATRA, and negative/positive colour prints (which are likely to replace transparencies).

The volume appears vigorous but readable, thanks to the use by Mr. Germano Facetti of the lighter version of Bodoni with the Nebiolo Foundry's Etrusco for display.

MICHAEL OLIVER

SHORT NOTES ON OTHER BOOKS

THE ART TREASURES OF GERMANY. Edited by Bernard Lohse and Harald Busch. With an Introduction by Rudolf Hagelstange and Commentaries on the Illustrations by Helmut Domke. London, Batsford, 1958. £4 4s net

A pictorial survey (230 plates, 12 in colour) ranging from pagan times and the earliest beginnings of Christian art in Western Europe to the nineteenth century, and embracing architecture, painting, sculpture, goldsmiths' work, mosaic, stained glass and tapestry. The 'Germany' of the title may be understood to mean 'German collections' and not only German artists.

IMPRESSIONIST PAINTINGS IN THE LOUVRE. By Germain Bazin. London, Thames and Hudson, 1958. 28s net

101 plates in colour and 260 monochrome reproductions chosen by the Conservateur-en-chef of the Louvre to illustrate the incomparable collection under his care. With an admirable introduction tracing the history of the collection and meticulous notes on each of the plates. The standard of production and price well maintain the publishers' reputation.

GLASS THROUGH THE AGES. By E. Barrington Haynes. *Harmondsworth, Penguin Books, 1959. 8s 6d net*

A revised edition of an excellent survey (first published in 1948) which, in the author's words, is 'designed to arouse interest rather than . . . give instruction; to show where knowledge can be found . . . and to excite inquiry'. Particular attention is paid to English eighteenth-century glasses. There are 96 pages of illustrations.

THE ART OF RAYMOND LISTER. By Simon Lissim. *With a Foreword by L. G. G. Ramsey. Cambridge, John P. Gray & Son, 1958. (Limited edition) 30s net*

A sympathetic and penetrating study of an artist who has achieved distinction in several fields, notably in miniature painting, wood engraving and wrought-iron work. Fully illustrated and with a hand-coloured frontispiece.

THE INTERNATIONAL LAW OF ART. For Lawyers, Collectors and Artists. By Barnett Hollander. *London, Bowes and Bowes, 1959. 63s net*

Art here means visual or pictorial art. The author, a member of the New York bar, surveys the historical aspects of the problem of artistic copyright, the case law on which much present practice is based, and the various attempts which have been and are being made to secure international agreement for the future. The work is fully documented with references to sources and case histories.

THE PLANTAGENETS. By John Harvey. *London, Batsford, 1959. 25s net*

In his studies of the thirteen Plantagenet Kings of England, Mr. Harvey is more concerned with individual temperament and character than with affairs of state. The illustrations, in most cases of contemporary or near-contemporary likenesses, are a valuable feature of the book. (Revised edition: first published in 1946.)

LANDSCAPE COMPOSITION IN COLOUR. By Leonard Richmond. *London, Pitman, 1959. 30s net*

Written to provide the art student and amateur artist with an understanding of the function of pictorial composition, this book includes chapters on the basic plan of the picture, on the arrangement of shapes to form a harmonious whole, on tone values and colour composition, and on the different techniques to be used with mountain and waterside scenery. Fully illustrated, and with eight plates in colour.

OVER THE DRAWING BOARD. An Introduction to Architectural Draughtsmanship. By Robert Forman. *London, Cleaver Hulme Press, 1959. 15s net*

The second edition of Mr. Forman's useful guide, which explains practically every kind of draughtsmanship needed by the architect. Illustrated by the author.

TRADE DRAUGHTSMANSHIP AND DRAWING OFFICE PROCEDURE. By A. Edward Harvey. *London, Batsford, 1959. 21s net*

Particular emphasis is laid on the making of drawings which will show how an object will appear when built: i.e., anatomical drawings for the industrial designer and engineer. The work also deals with all normal methods of industrial draughting and the graphic forms of communication available to the trade draughtsman. A basic knowledge of plane and solid geometry, and an elementary knowledge of mechanical drawing, are assumed.

MODEL MAKING IN CARDBOARD. By Thomas Bayley. *Leicester, Dryad Press, 1959. 12s 6d net*

The author, himself an expert craftsman, demonstrates all the methods of construction necessary for three-dimensional work in a medium which has widespread educational and professional value.

FROM THE JOURNAL OF 1859

VOLUME VIII. 25th November

TRADE WITH THE CHINESE

From a paper 'On China, and its Relations to British Commerce', read to the Society by Sir John Bowring, F.R.S., a former Governor of Hong Kong.

I was asked lately, when on a visit to Coventry, what are the means of supply which China possesses? My answer was that her productive powers are almost unlimited. It is merely a question of price; and if the English merchant will pay to the Chinese a greater sum than their own manufacturers, they will be able to secure as greater an amount of the raw material as they can require. The Chinaman is a man of common sense, and you have only to offer him a higher price for what he desires to sell than is offered by another, and you will be sure to get it; and if your quality is better and your price lower than your competitors for the article he wants to buy you may calculate on the Chinaman's custom. . . .

The Chinese have a character of industry, to be found not only in no part of the oriental, but, I believe, in no part of the western world. I came back to this country and found a great struggle going on between the masters and the workmen upon the question of reducing ten hours a day of labour to nine, for which the same liberal wages were to be paid. There are hundreds of thousands of Chinese who would be glad to toil sixteen hours a day if they could only get paid for it. The Chinese are essentially a people of an industrious, persevering, sober, and economical character. . . .

While I feel how much backwardness there is in China, and that in many matters there is a great deal to learn, I know that we might communicate to them very valuable knowledge. The only instance in which, so far as I know, they have generally adopted the improvements of the West, is in the general use of fire-engines, which are found in many of the principal cities in China, and which are worked with very great activity and dexterity. China, I think, might teach us something in other matters. In a collection that I made for the town of Sheffield, it was discovered that they had the art, I believe wholly unknown in Europe, of hardening brass to the consistency of steel; and there are brass instruments made in China at this moment of exceeding delicacy, that have all the power which we give to steel. I think also that something is to be learnt in the chemical field of inquiry. Many of the colours of China are very superior to those of Europe. There is one colour which has led to some curious investigations, namely, a perfect vegetable green. They have a green indigo, which is a permanent colour. Now I believe up to the present time we have never been able to make a green which will resist all the changes of temperature and climate. I have suggested, on two or three occasions, when I have had the opportunity of giving advice, that it is exceedingly important now that China is likely to be opened to European inquiries, that intelligent persons should be sent there, in order to see whether, from the experience of these forty centuries, something might not be gathered up that is of practical value. Intercourse may lead to the removal of many of their prejudices, but without that intercourse it is impossible to alter the stereotyped character of the Chinese. They treat us with disdain, and often with perfidy; but they are all educated under the idea that we are no better than 'barbarians', and that we ought to be dealt with as if we were wild beasts. Such are the teachings of their philosophers, who represent that the world is divided into two great portions, that its centre is under the canopy of Heaven—the ordinary name which they give to their country—all civilization being under this canopy, and that besides this

there is the barbarism which is beyond. We represent that barbarism; and in discussing the matter with the Chinese, they say 'You are great fighters; you have attended to the art of war, and we have not, but you have no civilization; you have no language that is intelligible. It is true, you are taught to write, but then we see a man who comes from a nation of three or four millions of people, and on the other side of the water there is another nation of three or four millions, and the writing of the man on one side of the river is given to a man on the other side, and he cannot make out a word of it'. They say, 'We are three or four hundred millions of people who cannot, indeed, understand one another's talk, but everybody understands what everybody writes'. I never found a Chinaman embarrassed when he met a man from a distant province, for though their spoken idioms are different, their written signs are identical. Failing to be understood in speech, the Chinaman makes a mark on his hand, and he is understood immediately. The Chinese often taunt us with the imperfection of our education and the narrow scope of our language, and in this respect deem us inferior to the natives of Japan, Korea, or Siam, who can read the Chinese character.

Some Activities of Other Societies and Organizations

MEETINGS

- WED. 28 OCT.** Electrical Engineers, The Institution of, at Savoy Place, W.C.2. 5.30 p.m. M. J. L. Puling : *Development of Eurovision.*
- MON. FRI. MON. 2, 6, 9 NOV.** University of London, at University College, Anatomy Lecture Theatre, Gower Street, W.C.1. 5.30 p.m. Alfred Fairbank : *Humanistic scripts of the fifteenth and sixteenth centuries.*
- TUES. 3 NOV.** Commonwealth Society, Royal, at Northumberland Avenue, W.C.2. 8 p.m. Sir Harold Gillett : *City traditions.*
- Mechanical Engineers, Institution of,** at 1 Birdcage Walk, S.W.1. 6 p.m. A. T. Bowden : *The design and testing of large gas ducts.*
- Plant Engineers, Institution of,** at the Royal Society of Arts, John Adam Street, W.C.2. 7 p.m. T. A. L. Paton : *The constructional problems encountered in the Kariba dam project.*
- WED. 4 NOV.** Kinematograph Society, British, at Colour Film Services Ltd. Theatre, 22-5 Portman Close, Baker Street, W.I. 7.30 p.m. G. F. Dutton : *Magnetic tape for video and audio recording.*
- Newcomen Society,** at the Science Museum, S. Kensington. 5.30 p.m. Harold B. Hancock and Norman B. Wilkinson : *Joshua Gobin, an American manufacturer in England and Wales, 1795-1801.*
- Petroleum, Institute of,** at 61 New Cavendish Street, W.I. 5.30 p.m. V. S. Ault : *Oil and transport.*
- THURS. 5 NOV.** Electrical Engineers, Institution of, at Savoy Place, W.C.2. 5.30 p.m. M. C. Crowley-Milling : *The application of irradiation in industry.*
- FRI. 6 NOV.** Photographic Societies, Central Association of, at the Royal Society of Arts, John Adam Street, W.C.2. 7 p.m. Sir James Mann : *The photography of metal work.*
- MON. 9 NOV.** Engineers, Junior Institution of, at Livesey Clegg House, 44 Union Street, Sheffield. 1. 7.30 p.m. A. Haddock : *Electricity supplies to large electric arc furnaces.*
- Geographical Society, Royal,** at Kensington Gore, S.W.7. 8.30 p.m. A. J. Marshall : *Pearl and cattle country of the Kimberleys.*
- Transport, Institute of,** at Jarvis Hall, R.I.B.A., 66 Portland Place, W.I. 5.45 p.m. J. L. Grumbridge, A. W. Tait, A. F. R. Carling : *Fares structures : air, rail, road.*
- WED. 11 NOV.** Building Centre, at 26 Store Street, W.C.1. 12.45 p.m. Film Show : *West Germany—Stone by Stone, Three Master Wood Engravers, Tilman Kiemenschnieder.*
- SAT. 14 OCT.—FRI. 6 NOV.** Building Centre, at Store Street, W.C.1. Mon.-Fri. 9.30 a.m. to 5 p.m. Sat. 1 p.m. Exhibition : *Modern Yugoslavian Architecture.*

Gas Engineers, Institution of, and Coke Research Association, British, at the Institution of Civil Engineers, Great George Street, S.W.1. 2.30 p.m. G. W. Lee : *The first year at the Coke Research Centre.*

Radio Engineers, British Institution of, at 9 Bedford Square, W.C.1. 6.30 p.m. R. P. Gannon : *Physiological and acoustical aspects of hearing.*

THURS. 12 NOV. Analytical Chemistry, Society for, at the Mason Theatre, The University, Edmund Street, Birmingham 3. 6.30 p.m. L. Barker : *The identification and determination of phenols.*

Commonwealth Society, Royal, at Northumberland Avenue, W.C.2. 1.15 p.m. Sir John Wolfenden : *Education—for what?*

FRI. 13 NOV. Engineers, Junior Institution of, at Pepys House, 14 Rochester Row, S.W.1. 7 p.m. W. C. C. Ball : *Electronic components.*

TUES. 17 NOV. Locomotive Engineers, Institution of, at 1 Birdcage Walk, S.W.1. 5.30 p.m. G. E. Schools : *The Swindon-built diesel hydraulic locomotive.*

WED. 18 NOV. Architects, Royal Institute of British, at 66 Portland Place, W.I. 6.30 p.m. Discussion : *Electric floor heating.*

Building Centre, at 26 Store Street, W.C.1. 12.45 p.m. Film Show : *Norway—Auræ Power Project, Norwegian Silver.*

Victoria & Albert Museum, S. Kensington, S.W.7. 6.15 p.m. Trenchard Cox : *The pictures at Apsley House.*

MON. 23 NOV. Geographical Society, Royal, at Kensington Gore, S.W.7. 8.30 p.m. Barrie E. Juniper : *Oxford University Tanganyika expedition.*

TUES. 24 NOV. Civil Engineers, Institution of, at Great George Street, S.W.1. 5.30 p.m. Arthur Dean, Peter Chalmers, A. C. Layhe : *The mechanization of railway civil engineering maintenance works.*

Radar and Electronics Association, at the Royal Society of Arts, John Adam Street, W.C.2. 7.30 p.m. H. E. M. Barlow : *Waveguides for long distance communications.*

FRI. 28 NOV. Photographic Societies, The Central Association of, at the Royal Society of Arts, John Adam Street, W.C.2. 7 p.m. Margaret Hacker : *Photography and architecture.*

OTHER ACTIVITIES

SAT. **14 OCT.—FRI. 6 NOV.** Building Centre, at Store Street, W.C.1. Mon.-Fri. 9.30 a.m. to 5 p.m. Sat. 1 p.m. Exhibition : *Modern Yugoslavian Architecture.*

INDEX TO VOLUME CVII

A

- A.B.C.C. commercial apprenticeship scheme, *note*, 360
 Addison, P. L., *disc.*, The work of the Historic Churches Preservation Trust, 688
 Aeroplane, The, *Cantor lecture*: I. The birth of the aeroplane by C. H. Gibbs-Smith, 78 ; II. The development of the aeroplane by Peter W. Brooks, 97 ; III. The future of the aeroplane, by Eric Mensforth, 117
 Albert medal, see Royal Society of Arts
Alfred Bossom lecture, The mechanization of building constructional processes, by Dr. D. G. R. Bonnell, 327
 Allan, D. G. C., *notes*, Notions of economic policy expressed by the Society's correspondents and in its publications : pt. II, 55 ; pt. III, 217 ; *book review*, Georgian chronicle : Mrs. Barbauld and her family, 520 ; *note*, Thomas Wilkins, the Society's printer, and Lord George Gordon, 74
 Allen, Cecil J., *paper*, Modernizing the railways—motive power and operation, 19
 Allen, G. Keith, *disc.*, Improving the efficiency of the mining industry, 48
 Alport, N. L., *disc.*, A study of the pollution of the Thames estuary, 472
 Allt, Dr. W. Greenhouse, *chair*, Style and era in Church melody : an historical survey, 132
 Andrews, John, *appendix to disc.*, The mechanization of building constructional processes, 345
 Antley, Eddie, *paper*, Films in alliance with industry, 242
 Apprenticeship conference, *annual report*, 608
 Architects, competition for, *note*, 148
 Arnold, Percy, *disc.*, The history of the African pyrethrum industry, 440
 Art of the Australian aborigines, The, *paper*, by Charles Mountford, 851
 Asafu-Adjei, Edward O., receives silver medal, 17
 Aslin, C. H., *obituary*, 515
 Atkins, Dr. W. R. G., *obituary*, 444
 Avery, D. J., *annual general meeting*, 615

B

- Baker, Humphrey, *disc.*, Modernizing the railways, 29
 Bale, A. Powis, *disc.*, The consulting engineer and his contribution to the national economy, 176 ; *disc.*, Large scale organization and change : a study in oil marketing, 195 ; *disc.*, Land utilization in the Commonwealth, 212 ; *disc.*, The mechanization of building constructional processes, 341 ; *disc.*, The work of the Historic Churches Preservation Trust, 688 ; *disc.*, The development of the Port of London, 832 ; *disc.*, The art of the Australian aborigines, 859
 Banfield, Dr. F. H., *chair*, Rheology : the science of plastic flow, 346
 Barry, James, paintings in lecture hall restored, 729
 Barry, Lt.-Col. James, *note*, 216
 Barton, Hiram, *disc.*, Rheology : the science of plastic flow, 346
 Beaufoy, Leroy A., *review*, Journal of mechanical engineering science, 872
 Beddington, Jack, *obituary*, 516
 Benjamin Franklin medal, see Royal Society of Arts
 Bennett, Sir Thomas, *conducts symposium*, The future of Nash terraces, 387 ff.
 Betts, L. C., *disc.*, A study of the pollution of the Thames estuary, 474
 Biggs, John R., *book review*, Roman lettering, 223
 Biological control of agricultural pests, *Fernhurst lecture*, by Professor George C. Varley, 475
 British civil aeroplane, *Cantor lecture*, by C. H. Gibbs-Smith, 78
 Blood, Sir Hilary, *vote of thanks*, Trade and the bamboo curtain, 820
 Blunt, Sir Anthony, *Fred Cook memorial lecture*, Illusionist decoration in Central Italian painting of the Renaissance, 309
 Boig, B. D., *disc.*, The technical development of eastern Commonwealth countries under the Colombo Plan, 665
 Bonnell, Dr. D. G. R., *Alfred Bossom lecture*, The mechanization of building constructional processes, 327

BOOKS, NOTES ON :

- Acoustics, noise and buildings, by P. H. Parkin and H. R. Humphreys, 518
 Arts and crafts of India and Pakistan, by Shanti Swarup, 220
 Big molecules, by Sir Harry Melville, 63
 Black fens, The, by A. K. Astbury, 299
 Book design and production, Vol. I, nos. 1 and 2, ed. by James Moran, 221
 British shopping centres : new trends in layout and distribution, by Wilfred Burne, 725
 British county, by Paul Mauger, 519
 Capture of Quebec, The, by Christopher Lloyd, 784
 Collins guide to English parish churches, ed. by John Betjeman, 152
 Concise history of art, by Germain Bazin, 150
 Country craftsman, The, by W. M. Williams, 82
 Cultural foundations of industrial civilization, The, by John U. Nef, 446
 Decorative art 1958-9, 299
 Early sculpture of Ely cathedral, The, by George Zarnecski, 722
 Eighteenth-century German porcelain, by George Savage, 302
 English art 1800-1870, by T. S. R. Boase, 721
 English furniture designs of the eighteenth century, by Peter Ward-Jackson, 870
 Face of early Canada, The, by F. St. George Spendlove, 448
 Georgian chronicle : Mrs. Barbauld and her family, by Betty Rodgers, 520
 Golden number, The, by M. Borissavlevitch, 301
 Gothic Europe, ed. by Harold Busch and Bernd Lohse, 673
 Graphics annual 1958-9, ed. by Walter Herdeg, Charles Rosner, Kim Taylor, 367
 Handbook of textile fibres, by J. Gordon Cook, 78
 Handwriting : a national survey, by Reginald Piggott, 368
 History of western technology, A, by Friedrich Klemm, 589
 Houses and bungalows, by June Park, 369
 Individual and the universe, The, by A. C. B. Lovell, 517
 Industrial muse, The, compiled by Jeremy Warburg, 591
 Investment in innovation, by C. F. Carter and B. R. Williams, 60
 John Baskerville : a bibliography, by Philip Gaskell, 672
 Journal of mechanical engineering science, 872
 Kensington, by William Gaunt
 Les belles heures du Due de Berry, 588
 Medical biology and Etruscan origins, ed. by G. E. W. Wolstenholme and Cecilia M. O'Connor, 871
 Mind readers, The, by S. G. Soal and H. T. Bowden, 868
 Minor English wood sculpture 1400-1550, by Arthur Gardner, 370
 Modern German painting, by Hans Roethel, 150
 Modern publicity 1958-9, ed. by Frank A. Mercer, 367
 Modern science and the nature of life, by W. S. Beck, 61
 Modular 2, by le Corbusier, 300
 North Somerset and Bristol (Buildings of England), by Nikolaus Pevsner, 153
 Paper-making as an artistic craft, by John Mason, 786
 Penrose annual, vol. 53, ed. by Allan Delafons, 874
 Philosophical enquiry into the . . . sublime and beautiful, by Edmund Burke (ed. J. T. Boulton), 150
 Picasso : his life and work, by Roland Penrose, 447
 Picture encyclopaedia of art, by various hands, 150
 Pioneer research on the atom : the life story of Frederick Soddy, by Muriel Howorth, 723
 Puppets and puppetry, by Cyril Beaumont, 522
 Psychological study of typography, A, by Sir Cyril Burt, 724
 Roman lettering, 223
 Round towers to English parish churches, The, by Claude J. W. Messent, 153
 Sixth sense, The, by Rosalind Heywood, 868
 Some outstanding clocks over 700 years, by H. Alan Lloyd, 521

JOURNAL OF THE ROYAL SOCIETY OF ARTS

- South and West Somerset (Buildings of England), by Niklaus Pevsner, 153
- Technical colleges and colleges of further education, by Barbara Price, 783
- Technical writer, The, by J. W. Godfrey and G. Parr, 784
- Trafalgar, by Oliver Warner, 784
- Welfare state in New Zealand, The, by J. B. Condliffe, 875
- Woodcuts, by John R. Biggs, 222
- Books: Short notes on, 270, 449, 523, 592, 726, 787, 875
- Bordia, Miss Rosamund, *disc.*, The work of the Historic Churches Preservation Trust, 688
- Bosom, Sir Alfred, *Inaugural address*, The challenge of the future, 12; *vote of thanks*, The consulting engineer and his contribution to the national economy, 179; *chair*, Alfred Bosom lecture, The mechanization of building constructional processes, 327; *vote of thanks*, Industrial art bursaries exhibition opening, 456; *chair*, annual general meeting, 599; visit to N. America, annual report, 601; *chair*, Trueman Wood lecture, The growth and scope of industrial design in the United States, 640
- Bowie, S. H. U., silver medal, annual report, 614; *paper*, The uranium and thorium resources of the Commonwealth, 704
- Bowman, Sir James, *chair*, Cadman memorial lecture, Improving the efficiency of the mining industry, 33
- Bret, Honble. Lionel, *book review*, Houses and bungalows, 369
- Brewer, F. M., *book review*, Pioneer research on the atom : The life story of Frederick Soddy, 723
- Bruden, F. W., *disc.*, The development of the Port of London, 834
- Britain and the technical development of eastern Commonwealth countries under the Colombo Plan, Henry Morley lecture, by Dr. W. Railston, 652
- British Association annual meeting, note, 511
- British Association—Granada lectures, note, 773
- Brooks, Peter W., *Cantor lecture*, The development of the aeroplane, 97
- Brown, Sir Frank, *obituary*, 298, 366
- Brown, Colonel W. J., *obituary*, 719
- Brunner, Christopher T., *paper*, Large scale organization and change : a study in oil marketing, 180; silver medal, annual report, 614
- Burnt, Martin, *disc.*, The future of Nash terraces, 399
- Bryant, Sir Andrew, *disc.*, Improving the efficiency of the mining industry, 493
- Buchanan, Professor R. O., *chair*, Land utilization in the Commonwealth, 199
- Bulecock, Honble. F. W., unable to be present to receive silver medal, 18
- Bunge, J. H. O., *obituary*, 444
- Business history, note, 215; conference, note, 866
- Byford, A. N., awarded Howard prize for 1959, 791
- C
- Cadman memorial lecture*, Improving the efficiency of the mining industry, by H. A. Longden, 33
- Calvert, John T., *disc.*, The consulting engineer and his contribution to the national economy, 178
- Campbell, C. B., *disc.*, The uranium and thorium resources of the Commonwealth, 716
- Cansdale, George, Dr. Mann juvenile lecture, From jungle to zoo, 292
- CANTOR LECTURES :
- 1st Course. The aeroplane : I. The birth of the aeroplane, by C. H. Gibbs-Smith, 78; II. The development of the aeroplane, by Peter W. Brooks, 97; III. The future of the aeroplane, by Eric Mensforth, 117
- 2nd Course. The classical country house in 18th-century England, by Sir John Summerson : syllabus, 226; I. Patronage and performance 1710–40, 539; II. Progress and decline of the greater house, 554; III. The idea of the villa, 570
- 3rd Course. Research in textiles : I. Research in wool, by Professor J. B. Speakman, 731; II. Research in cotton, by Professor J. J. Vincent, 747; III. Research in man-made fibres, by J. R. Whinfield, 762
- Casson, Sir Hugh, *chair*, The art of the Australian aborigines, 851
- Cavaliero, Revd. Glen, *book reviews*, Collins guide to English parish churches, 152; The round towers to English parish churches, 153
- Cave-Browne-Cave, Wing-Commander T. R., *book review*, Acoustics, noise and buildings, 518
- Century of British education in India 1857–1957, A, Sir George Birdwood memorial lecture, by Professor M. S. Sundaram, 491
- Challenge of the future, *Inaugural address*, by Sir Alfred Bosom, 12
- Classical country house in 18th-century England, three *Cantor lectures*, by Sir John Summerson. I. Patronage and performance 1710–40, 539; II. Progress and decline of the greater house, 554; III. The idea of the villa, 570
- Cohen of Birkenhead, Lord, *chair*, Thomas Holland memorial lecture, The Commonwealth transantarctic expedition, 690
- Coleman, Commander A. M., *disc.*, A study of the pollution of the Thames estuary, 474
- Coleman, Dr. D. C., *note*, Premiums for paper : the Society and the early paper industry, 361
- Colquhoun, R. S., *disc.*, Road development in the overseas territories, 291
- Commonwealth Institute, new building, note, 666
- Commonwealth transantarctic expedition, The, Thomas Holland memorial lecture, by Sir Vivian Fuchs, 690
- Communication in the modern world, note, 773
- Competition for manufacturers' trade and technical literature, note, 512
- Competitors on Africa—South of the Sahara and the Sudan, note, 588
- Consulting engineer and his contribution to the national economy, The paper, by Julian S. Tritton, 163
- Contribution of psychiatry to modern medicine, The, paper, by Dr. David Stafford-Clark, 836
- Cook, G. Evan, *disc.*, Packaging progress, 636
- Cooke, Revd. Canon Greville, *paper*, Style and era in Church melody : an historical survey, 134
- Corday-Morgan medal and prize for 1958, note, 361
- CORRESPONDENCE :
- * Stones of Britain, 59
- Examination wastage, 60
- Cotton fashion fabrics, design award for, note, 667
- Council for Visual Education essay competition, note, 587
- Cranmer-Brown, *disc.*, Packaging progress, 638
- Cremer, Herbert W., *chair*, A study of the pollution of the Thames estuary, 459
- Crookshank, Viscount, *chair*, The work of the Historic Churches Preservation Trust, 676
- D
- Dale, Lawrence, *obituary*, 445
- Danton, G. L., receives silver medal, 18
- Davies, G. Vivian, *disc.*, Modernizing the railways, 20; *disc.*, Improving the efficiency of the mining industry, 48, 49; *disc.*, The consulting engineer and his contribution to the national economy, 177; *disc.*, Large scale organization and change : a study in oil marketing, 196; *disc.*, Films in alliance with industry, 253; *disc.*, Road development in the overseas territories, 290; *disc.*, The future of Nash terraces, 398; *disc.*, A study of the pollution of the Thames estuary, 473
- Davis, Terence, *disc.*, The future of Nash terraces, 398
- Day, Robin, appointed R.D.I., 528
- Dean, F. W., *obituary*, 516
- de Beer, Sir Gavin, receives silver medal, 17
- de Majo, W. M., *disc.*, Packaging progress, 637
- Design in the souvenir industry, note, 443
- Designs of the year, note, 510
- Development of the aeroplane, *Cantor lecture*, by Peter W. Brooks, 97
- Development of the Port of London, The, *paper*, by Sir Leslie Ford, 821
- Deutschland hunting tapestries, note, 865
- de Waele, A., *disc.*, Rheology : the science of plastic flow, 354, 356
- Diefenbaker, Rt. Honble. John, receives diploma of Fellowship from the President, 595
- Dilley, E. A., *disc.*, The consulting engineer and his contribution to the national economy, 177
- Dixey, Dr. F., *disc.*, The uranium and thorium resources of the Commonwealth, 715
- Duke of Edinburgh's prize for elegant design, note, 54; prize awarded, note, 511
- Dundas, C. A. F., *disc.*, The art of the Australian aborigines, 860

INDEX

E

- Edinburgh, H.R.H. the Duke of, presents Albert Medal for 1958 to H.M. the Queen, 2; inspects new premises, 2; prize for elegant design, 54, 511; presents Albert Medal for 1959 to Vincent Massey, 595; *annual report*, 600
 Edinburgh festival, *note*, 770
 Egerton, Sir Alfred, *obituary*, 781
 Elizabeth II, H.M. Queen, receives Albert medal for 1958, 2; *annual report*, 600
 Endowed prizes, *see* Howard prize, Fothergill prize, Shirley Jackson
 Estates, Earl of, *paper*, The work of the Historic Churches Preservation Trust, 676
 Evans, Dr. Joan, *book reviews*, Minor English wood sculpture 1400-1550, 370; Gothic Europe, 673
 Examination wastage, *letter from* Dr. Ethel C. Venables, 60
 EXHIBITIONS :
 1759—The year of victories, 509
 Bolam, John, 358
 Burrell, Sir William, bequest (Edinburgh festival), 772
 'Chess throughout the Centuries', 867
 Children's art, 772
 'Communication and Persuasion', 511
 Compiled paper fusion—British achievements, 148
 Czech art (Edinburgh festival), 771
 Devonshire hunting tapestries, 865
 Eighteenth-century portrait busts, 588
 Faussett, Shelley, 358
 Freedman, Barnett, 52
 Gilpin, William, and the picturesque, 588
 Grant, Duncan, 510
 Hone, Eve, 216
 Housman, A. E., 719, 774
 International plastics exhibition and convention, 511
 Manchester Building Centre Ltd., 867
 Minton, John, 52
 Modern silver, 588
 Murray Graham collection of carpets, 54
 New American painting, 357
 'Pick of the Packs', 866
 Pollock, Jackson, 53
 Roman art exhibition at Manchester, 864
 Royal Academy summer exhibition, 507
 Royal Drawing Society's annual exhibition, 444
 Russian painting from the 13th to the 20th century, 214
 Scottish decorative arts of the Renaissance (Edinburgh festival), 772
 South African art, 510
 Stone, Reynolds, 444
 Stubbs, George : rediscovered anatomical drawings, 54
 Swiss industrial architecture, 773
 Swiss industrial design, 774
 Tolansky, Ethel, 509
 Toys and table games, 119
 Treasures of Cambridge, 358
 Two centuries of British shipping, 719
 Urvater collection, 53
 Young contemporaries, 357

F

- Falkner, H., *disc.*, Technical education : an assessment, 268
 Fenton, J. M., *disc.*, Road development in the overseas territories, 290
Fernhurst lecture, The biological control of agricultural pests, by Professor George C. Varley, 475
 Field, B., *disc.*, Packaging progress, 638
 Film evenings, announcements, 72, 158, 226; *annual report*, 609; *announcement*, 790
 Films in alliance with industry, *paper*, by Edgar Anstey, 242
 Flinley, Donald J., *disc.*, The art of the Australian aborigines, 860
 Fitzgerald, Professor R. C., *obituary*, 366
 Ford, Sir Leslie, *paper*, The development of the Port of London, 821
 Foreman, Mrs. F. C., *disc.*, The contribution of psychiatry to modern medicine, 849
Fothergill prize, 1958 : *essay*, Special hydrant-indicating nails, by E. C. Simpson, 51; 1959 : *announcement*, 228; *annual report*, 607; *results*, 791; *essay*, Safety in paraffin oil heaters, by E. C. Simpson, 862

- Fountain, D. M., *disc.*, The mechanization of building constructional processes, 342
 Fowler, Mrs. Shirley M., *disc.*, Packaging progress, 638
 Fraser, L. N., *book review*, Buildings in the country, 519; British shopping centres : new trends in layout and distribution, 725
 Fraser, R. A., *disc.*, A study of the pollution of the Thames estuary, 473
Fred Cook memorial lecture, Illusionist decoration in Central Italian painting of the Renaissance, by Sir Anthony Blunt, 309
 Freeborn, A. S., *disc.*, Rheology : the science of plastic flow, 355
 Free trade association of the 'seven', *note*, 773
 From jungle to zoo, *Dr. Mann juvenile lecture*, by George Cansdale, 292
 Fry, E. Maxwell, *symposium*, The future of Nash terraces, 392
 Fuchs, Sir Vivian, *Thomas Holland memorial lecture*, The Commonwealth transantarctic expedition, 690
 Fussell, G. E., *book reviews*, The country craftsman, 62; The black fens, 299
 Future of Nash terraces : a symposium, 387
 Future of the aeroplane, *Cantor lecture*, by Eric Mensforth, 117
 Future of the Regent's Park terraces, *note*, 442

G

- Games, Abram, appointed R.D.I., 528
 Garnett, W. J., *disc.*, Land utilization in the Commonwealth, 212
 Gaze, Dr. R., *disc.*, Rheology : the science of plastic flow, 355
 Gibb, Sir Claude, *obituary*, 296
 Gibbs-Smith, C. H., *Cantor lecture*, The birth of the aeroplane, 78
 Giddings, W. F., *disc.*, Technical education : an assessment, 206, 240
 Glouc, John, *chair*, Packaging progress, 621
 Glover, Colored W. R., *obituary*, 782
 Goldup, T. E., *obituary*, 868
 Goodale, Sir Ernest, Industrial art bursaries exhibition opening, 453; *vote of thanks*, annual general meeting, 620
 Goodhart-Rendel, H. S., *obituary*, 671
 Graham, Mrs. Murray, *disc.*, The art of the Australian aborigines, 859
 Grantham, Sir Alexander, *chair*, Trade and the bamboo curtain, 807, 817
 Gray, Anton, *chair*, The uranium and thorium resources of the Commonwealth, 704
 Gray, Milner, *paper*, Packaging progress, 621
 Green, H. E. J., *disc.*, A study of the pollution of the Thames estuary, 473
 Griffin, L. J., *disc.*, Modernizing the railways, 30
 Growth and scope of industrial design in the United States, *Truman Wood lecture*, by Walter Dorwin Teague, 640

H

- Hacking, Sir John, *disc.*, Improving the efficiency of the mining industry, 48
 Hatfield, Charles, receives silver medal, 17
 Haugard, Reginald G., *book review*, 18th-century German porcelain, 302
 Halcerow, Sir William, *obituary*, 8
 Hammersley, C., *disc.*, The mechanization of building constructional processes, 343
 Hanson, L. W., *book review*, John Baskerville : a bibliography, 673
 Harper, Curzon, *disc.*, Road development in the overseas territories, 289, 290
 Hartley, A. C., appointed Society's representative on the Armstrong memorial trust, 458
 Havinden, Ashley, *book reviews*, Graphis annual 1958-9, Modern publicity 1958-9, 367; *memoir* of Tom Purvis, 781
 Hawtrey, J. H. P., *disc.*, Road development in the overseas territories, 289
 He, John, *chair*, The development of the Port of London, 821
 Hayes, John, *book review*, Kensington, 154
 Heaven, Frank H., *disc.*, The mechanization of building constructional processes, 340

JOURNAL OF THE ROYAL SOCIETY OF ARTS

- Heilbron, Sir Ian, *chair*, The history of the African pyrethrum industry, 423
- Hemmant, D. G., *disc.*, The technical development of eastern Commonwealth countries under the Colombo Plan, 665
- Henrion, F. H. K., appointed R.D.I., 528
- Henry Morley lecture*, Britain and the technical development of eastern Commonwealth countries under the Colombo Plan, by Dr. W. Railston, 652
- Higgens, Humphrey, *book review*, The industrial muse, 591; The sixth sense, 868; The mind readers, 869
- Hiley, Richard, *book review*, The golden number, 301
- Historic Churches Preservation Trust, Work of, paper, 676; grants to churches (III), 680-7
- History of the African pyrethrum industry, *paper*, by Dr. T. F. West, 423
- Hohier, Christopher, *book review*, The early sculpture of Ely cathedral, 722
- Holland, Dr. R. W., *vote of thanks*, Inaugural meeting, 18; *chair*, Technical education : an assessment, 255; *memoir* of E. M. Rich, 514; *vote of thanks*, annual general meeting, 620
- Holmes, Dr. E., *vote of thanks*, The biological control of agricultural pests, 490
- Hood, B. H., *disc.*, A century of British education in India, 506
- Howard prize for 1959, *announcement*, 229; 1958, *annual report*, 607; 1959 results and award to A. N. Byford, 791
- Howison, Mrs., *disc.*, The art of the Australian aborigines, 860
- Hughes, G. Bernard, *note*, Treasures of Cambridge at Goldsmiths' Hall, 358; *book reviews*, Les belles heures du Due de Berry, 588; English furniture designs of the eighteenth century, 870
- Hughes, Dr. L. E. C., *disc.*, Technical education : an assessment, 268
- Hume, Sir Nutcombe, *book review*, Investment in innovation, 60
- Hunt, Dr. Reginald, *disc.*, Style and era in Church melody, 145
- Hyde, J. H., *obituary*, 720
- I**
- Illuminating Engineering Society, golden jubilee, *note*, 296
- Illusionist decoration in Central Italian painting of the Renaissance, *Fred Cook memorial lecture*, by Sir Anthony Blunt, 309
- Improving the efficiency of the mining industry, *Cadman memorial lecture*, by H. A. Longden, 33
- Indian Institute of Science, golden jubilee, *note*, 215
- Industrial archaeology, conference on, *note*, 773
- Industrial designs, legal protection of, *note*, 718
- Irving, Laurence, unable to be present to receive silver medal, 17
- J**
- Jackman, M. I., *disc.*, A study of the pollution of the Thames estuary, 474
- Jackson, Sir Willis, *chair*, *Henry Morley lecture*, Britain and the technical development of eastern Commonwealth countries under the Colombo Plan, 652
- James, J. R., receives silver medal, 17
- Jameson, John S., *disc.*, Packaging progress, 636
- Jennett, Sean, *book review*, Woodcuts, 222
- Johnson, Alice M., *book review*, The face of early Canada, 448
- Jones, D. Price, *disc.*, The biological control of agricultural pests, 498
- K**
- Kenwood, summer exhibitions at, *note*, 588
- Kettering, C. F., *obituary*, 149
- Knox, G. R. M., *disc.*, The future of Nash terraces, 399
- L**
- Lall, Miss Diana M., *disc.*, The art of the Australian aborigines, 860
- Land utilization in the Commonwealth, *paper*, by Dr. L. Dudley Stamp, 199
- Large scale organization and change : a study in oil marketing, *paper*, by Christopher T. Brunner, 180
- Laughton, Dr. A. S., receives silver medal, 17
- Lawson, D. I., judges Howard prize, 791
- Layout, Mrs. E., *disc.*, The mechanization of building constructional processes, 344
- Legal protection of industrial designs, *note*, 718
- Le May, Dr. Reginald, *disc.*, The technical development of eastern Commonwealth countries under the Colombo Plan, 664
- Leverhulme research awards, 1959, *note*, 54
- Lewis, John, *review*, Book design and production, Vol. I, nos. 1 and 2, 221
- Leworthy, Leslie, *appendix to disc.*, The future of Nash terraces, 404
- Lillie, Dr. Harry R., *disc.*, The biological control of agricultural pests, 489
- Lindsay, Sir Harry, *memoir* of Sir Frank Brown, 366
- Li Nei-Chong, *disc.*, Trade and the bamboo curtain, 818
- Longden, H. A., *Cadman memorial lecture*, Improving the efficiency of the mining industry, 33
- Loucas, Mrs. Daphne, *disc.*, The contribution of psychiatry to modern medicine, 849
- Loweth, Sidney, *annual general meeting*, 615, 617
- M**
- McCallum, Sir William, *obituary*, 721
- MacGregor, Alasdair Alpin, *disc.*, The art of the Australian aborigines, 861
- MacGregor, J. E. M., *symposium*, The future of Nash terraces, 391
- McKie, Professor Douglas, *book review*, The cultural foundations of industrial civilization, 446
- Macnair, Brigadier J. L. P., *disc.*, Style and era in Church melody, 148; *disc.*, The future of Nash terraces, 399; *disc.*, The work of the Historic Churches Preservation Trust, 688; *disc.*, Trade and the bamboo curtain, 818
- Manchester Building Centre, *note*, 867
- Mann, Dr., *juvenile lectures*, *announcement*, 6; From jungle to zoo, by George Canale, 292
- Markham, Miss Violet, *obituary*, 297
- Martin, Dr. D. C., *paper*, Some achievements of the International Geophysical Year, 406; silver medal, *annual report*, 614
- Martin, Dr. J. T., *disc.*, The history of the African pyrethrum industry, 440
- Massey, Dr. Ronble Vincent, awarded Albert medal for 1959, 451
- Masterman, O. J., *disc.*, The mechanization of building constructional processes, 343
- Matthews, Sir Ronald, *obituary*, 672
- May, D. O., *disc.*, The mechanization of building constructional processes, 340
- Mechanization of building constructional processes, The, *Alfred Bossom lecture*, by Dr. D. G. R. Bonnell, 327
- Meek, M., *disc.*, A study of the pollution of the Thames estuary, 473
- MEETINGS, COMMONWEALTH :**
- 1st meeting. Land utilization in the Commonwealth, by Dr. L. Dudley Stamp, 199
 - 2nd meeting. Road development in the overseas territories, by Dr. R. S. Millard, 270
 - 3rd meeting. *Thomas Holland memorial lecture*. The Commonwealth transantarctic expedition, by Sir Vivian Fuchs, 691
 - 4th meeting. The history of the African pyrethrum industry, by Dr. T. F. West, 423
 - 5th meeting. The art of the Australian aborigines, by Charles Mountford, 851
 - 6th meeting. *Sir George Birdwood memorial lecture*. A century of British education in India 1857-1957, by Professor M. S. Sundaram, 491
 - 7th meeting. *Henry Morley lecture*. Britain and the technical development of eastern Commonwealth countries under the Colombo Plan, by Dr. W. Railston, 652
 - 8th meeting. The uranium and thorium resources of the Commonwealth, by S. H. U. Bowie, 704
- MEETINGS, ORDINARY :**
- 1st meeting. *Inaugural address*. The challenge of the future, by Sir Alfred Bossom, 12
 - 2nd meeting. Modernizing the railways—motive power and operation, by Cecil J. Allen, 19
 - 3rd meeting. *Cadman memorial lecture*. Improving the efficiency of the mining industry, by H. A. Longden, 33

INDEX

- 4th meeting. Style and era in Church melody : an historical survey, by Canon Greville Cooke, 134
- 5th meeting. The consulting engineer and his contribution to the national economy, by Julian S. Tritton, 163
- 6th meeting. Large scale organization and change : a study in oil marketing, by Christopher T. Brunner, 180
- 7th meeting. Films in alliance with industry, by Edgar Anstey, 242
- 8th meeting. Technical education : an assessment, by Lord Nathan, 255
- 9th meeting. *Fred Cook memorial lecture*. Illusionist decoration in central Italian painting of the Renaissance, by Sir Anthony Blunt, 309
- 10th meeting. *Alfred Bosom lecture*. The mechanization of building constructional processes, by Dr. D. G. R. Bonnell, 327
- 11th meeting. *Peter Le Neve Foster lecture*. Women as writers, by Sylvia Townsend Warner, 378
- 12th meeting. Rheology : the science of plastic flow, by Professor E. G. Richardson, 346
- 13th meeting. Designing, building and sailing yachts and boats, by Uffa Fox, *see column CVIII*
- 14th meeting. *Symposium*. The future of Nash terraces, 387
- 15th meeting. Some achievements of the International Geophysical Year, by Dr. D. C. Martin, 406
- 16th meeting. A study of the pollution of the Thames estuary, by Dr. B. A. Southgate, 459
- 17th meeting. *Fernhurst lecture*. The biological control of agricultural pests, by Professor George C. Varley, 475
- 18th meeting. Packaging progress, by Milner Gray, 621
- 19th meeting. *Trueman Wood lecture*. The growth and scope of industrial design in the United States, by Walter Downin Teague, 640
- 20th meeting. The work of the Historic Churches Preservation Trust, by the Earl of Euston, 676
- 21st meeting. Trade and the bamboo curtain, by the Earl of Verulam, 807
- 22nd meeting. The development of the Port of London, by Sir Leslie Ford, 821
- 23rd meeting. The contribution of psychiatry to modern medicine, by Dr. David Stafford-Clark, 836
- Mensforth, Eric, *Cantor lecture*, The future of the aeroplane, 117
- Mercer, Frank A., awarded Bicentenary medal for 1959, 528 ; *annual general meeting*, 616
- 'Merl' research summaries, 616
- Merlin, L. V., *disc.*, The mechanization of building constructional processes, 342
- Michell, A. G. M., *obituary*, 367
- Millard, Dr. R. S., *paper*, Road development in the overseas territories, 270 ; silver medal, *annual report*, 614
- Milne, Oswald P., elected Chairman of Council, 593
- Mitchell, Sir Godfrey, *disc.*, Improving the efficiency of the mining industry, 49
- Modernizing the railways—motive power and operation, *paper*, by Cecil J. Allen, 19
- Moore, Thomas, *note* (A well-earned premium), 442
- Mountford, Charles, *paper*, The art of the Australian aborigines, 851
- N
- Nathan, Lord, *paper*, Technical education : an assessment, 255 ; *chair*, Some achievements of the International Geophysical Year, 406
- National design competition 1959, *note*, 587
- Nettle, Commander A. S., *disc.*, The development of the Port of London, 833
- New treasury at Lincoln cathedral, *note*, 719
- Notions of economic policy expressed by the Society's correspondents and in its publications, *notes*, by D. G. C. Allan ; pt. II, 55 ; pt. III, 217
- O
- OBITUARY :**
- Ashlin, C. H., 515
- Atkins, Dr. W. R. G., 444
- Beddington, Jack, 516
- Brown, Sir Frank, 298, 366
- Brown, Colonel W. J., 719
- Bunge, J. H. O., 444
- Dale, Lawrence, 445
- Dean, F. W., 516
- Egerton, Sir Alfred, 781
- Fitzgerald, Professor E. C., 366
- Gibb, Sir Claude, 296
- Glover, Colonel W. R., 782
- Goldcup, T. E., 868
- Goodhart-Rendel, H. S., 671
- Halcrow, Sir William, 8
- Hyde, J. H., 720
- Kettering, C. F., 149
- McCallum, Sir William, 721
- Markham, Miss Violet, 297
- Matthews, Sir Ronald, 672
- Michell, A. G. M., 367
- Purvis, Tom, 780
- Rich, E. M., 514
- Rolph, Sir Gordon, 445
- Rook, Sir William, 149
- Shuttleworth, Sir Alfred, 517
- Taylor, Vernon C., 517
- Tisbury, Beryl, Sir Frederick, 298
- Tizard, Sir Henry, 867
- See also *annual report*, 610
- Oliver, Dr. J. H., *disc.*, A study of the pollution of the, Thames estuary, 472
- Oliver, Michael, *book review*, The Penrose annual, vol. 53, 874
- Osman, Louis, *symposium*, The future of Nash terraces, 393, 400, 405
- Owen, J. Lloyd, *disc.*, The consulting engineer and his contribution to the national economy, 178, 179 ; *disc.*, The mechanization of building constructional processes, 341-2 ; *disc.*, Rheology : the science of plastic flow, 355-6
- P
- Packaging progress, *paper*, by Milner Gray, 621
- Page, Cadness, *disc.*, Some achievements of the International Geophysical Year, 421
- Parker, Dr. A., *disc.*, Large scale organization and change : a study in oil marketing, 196
- Paxton memorial trust, proposal to award annual bursary, 377
- Pearson, E. O., *chair*, *Fernhurst lecture*, The biological control of agricultural pests, 475
- Peter Le Neve Foster lecture*, Women as writers, by Sylvia Townsend Warner, 378
- Pickard, Dr. O. G., *disc.*, Technical education : an assessment, 267, 268
- Pilning, Sir Harry, opens industrial art bursaries exhibition, 453
- Pinto, Professor V. de S., receives silver medal, 17
- Pirie, N. W., *book review*, Modern science and the nature of life, 61
- Plant, Sir Arnold, *chair*, Large scale organization and change : a study in oil marketing, 180
- Pockney, Revd. C. E., *disc.*, Style and era in Church melody, 147
- Pollak, Sylvia, *book review*, Paper-making as an artistic craft, 786
- Pollock, George, *chair*, Films in alliance with industry, 242
- Ponsoby, Mr., *disc.*, Road development in the overseas territories, 289
- Premises, Society's new, description, 73 ; purchase fund established, 792
- Premises for paper : the Society and the early paper industry, *note*, by Dr. D. C. Coleman, 361
- Preston, Michael R., *book review*, Handwriting : a technical survey, 368 ; A psychological study of typography, 724
- Professional practice in commercial art and design, *note*, 667
- Purvis, Tom, *obituary*, 780
- Q
- Quality in Industry', Conference on, *note*, 443
- R
- Ralston, Dr. W., *Henry Morley lecture*, Britain and the technical development of eastern Commonwealth countries under the Colombo Plan, 652
- R.D.I. : appointment of Robin Day, Abram Games, F. H. K. Henrion, Hans Schleger, Berthold Wolpe, Hans J. Wegner, 528 ; amendments to ordinance, 529 ; *annual report*, 600

JOURNAL OF THE ROYAL SOCIETY OF ARTS

- Redmayne, G. B., *disc.*, Land utilization in the Commonwealth, 212
 Regan, C. J., *disc.*, A study of the pollution of the Thames estuary, 472
 Reilly, Paul, appointed Director of the Council of Industrial Design, note, 296; *book review*, Decorative art 1958-9, 299
 Renoldson, Reginald, *disc.*, Style and era in Church melody, 147
 Research in cotton, *Cantor lecture*, by Professor J. J. Vincent, 747
 Research in man-made fibres, *Cantor lecture*, by J. R. Whinfield, 762
 Research in textiles, *Cantor lectures*: I. Research in wool, by Professor J. B. Speckman, 731; II. Research in cotton, by Professor J. J. Vincent, 747; III. Research in man-made fibres, by J. R. Whinfield, 762
 Research in wool, *Cantor lecture*, by Professor J. B. Speckman, 731
 Reynolds, Graham, *book review*, English art 1800-1870, 721
 Rheology: the science of plastic flow, *paper*, by Professor E. G. Richardson, 346
 Rich, E. M., *obituary*, 514
 Richardson, Sir A. E., *book review*, Edmund Burke: A philosophical enquiry into the . . . sublime and beautiful (ed. J. T. Boulton), 150
 Richardson, Professor E. G., *paper*, Rheology: the science of plastic flow, 346
 Road development in the overseas territories, *paper*, by Dr. F. S. Millard, 229
 Routh, Sir George, *obituary*, 445
 Rook, Sir William, *obituary*, 149
 Ross, Charles, *book reviews*, North Somerset and Bristol, South and West Somerset, 153
 Ross, M. D. H., *disc.*, Large scale organization and change: a study in oil marketing, 197
 Royal Commonwealth Society meetings, note, 774
- ROYAL SOCIETY OF ARTS:**
- Albert medal, 1958: presentation to H.M. the Queen, 2; 1959: nominations invited, 227; awarded to the Rt. Honble Vincent Massey, 451; presented, 595, 618; *annual report*, 600
 - Annual general meeting, *announcements*, 452, 527; proceedings, 599
 - Annual reception proposed, 458
 - Archives: Studies in the Society's: III, 55; IV, 217; V, 361; VI, 512; VII, 668; VIII, 774 (see also under Studies in the Society's archives)
 - Barry paintings, restoration of, *announcement*, 729
 - Benjamin Franklin Fellows, *announcement*, 374; *annual report*, 601
 - Benjamin Franklin medal, awarded to H. G. Nelson, 159; *annual report*, 600
 - Bicentenary medal, awarded to Frank A. Mercer, 528; *annual report*, 600
 - Bye-laws, amendments to, *annual general meeting*, 617
 - Christmas card: for 1958: *announcement*, 11; *annual report*, 610; for 1959, *announcements*, 453, 597 (III), 675, 730, 793
 - Committees, standing, 65
 - Commonwealth section committee, *annual report*, 608
 - Commonwealth societies conference, Joint, Society invited to join, 702
 - Competitors' association, proposal to admit, 458; by-laws for the admission of, proposed, 527; *announcement*, 595; *annual general meeting*, 618; first to be admitted, 792, 794
 - Examinations, autumn series entries, 11; spring series entries, 308; Whitman series entries, 377; summer series entries, 531; *annual report*, 608; 1958-9 report, 796
 - Fellows' parlour and writing room, described, 75-6; location changed, 529
 - Fellowship, *annual report*, 610
 - Financial statements for 1958, 532; *annual report*, 616
 - Future development, Committee appointed to consider, 20; *announcement*, 160; *annual report*, 602
 - History of the Society, *announcement*, 374
 - Honorary Corresponding members in North America appointed, 229; *annual report*, 602
 - Industrial art bursaries, 1958: exhibition on tour, 11, 77; 1958: competition results, 232; exhibition *announcements*, 307, 374; exhibition opening, 453; exhibition on tour, 596, 675, 730, 792; *annual report*, 604; 1959: competition particulars, 596
 - Journal, index and binding cases, 11, 162; new advertisements representative appointed, 531; from the Journal of 1858-9, 64, 155, 223, 303, 371, 449, 524, 592, 674, 727, 787, 877
 - Library, redecoration of, *announcements*, 597, 675; *annual report*, 609
 - New rooms, description (Ill.), 73; *annual report*, 607
 - Premises purchase fund, *announcement*, 792
 - Science and industry committee, *annual report*, 609
 - Secretary, visit to N. America, 6; *annual report*, 601
 - Silver medal for papers, *annual report*, 614
 - Special activities committee, *annual report*, 607
 - Thomas Birdwood memorial trust*, offer of prize for 1959, 306; *annual report*, 606
 - Rundall, F. G., *disc.*, A study of the pollution of the Thames estuary, 472
 - Russell, Sir Gordon, retirement, note, 295
 - Russell, Professor R. D., designs furniture for new Council chamber, 75; *annual report*, 600, 601; *vote of thanks*, The growth and scope of industrial design in the United States, 651
 - Rutland, Dr. R. W. R., *disc.*, The uranium and thorium resources of the Commonwealth, 717
- 8
- Safety in paraffin oil heaters, *Fothergill prize essay*, by E. C. Simpson, 362**
- Sedding, G. S., *note*, Russian painting from the 13th to the 20th century, 214; *note*, A well-earned premium, 442
- Sargent, Sir John, *chair*, *Sir George Birdwood memorial lecture*, A century of British education in India 1857-1957, 491
- Schleifer, Hans, appointed R.D.I., 528
- Scholefield, Robert E., *notes*, The Society of Arts and the Lunar Society of Birmingham: pt. i, 512; pt. ii, 668
- Science and industry committee, *annual report*, 609
- Scott, K. J., *book review*, The welfare state in New Zealand, 873
- Seed, E. C., *disc.*, Improving the efficiency of the mining industry, 48
- Selwyn-Clarke, Sir Selwyn, *vote of thanks*, Inaugural meeting, 18; *disc.*, Land utilization in the Commonwealth, 213; *disc.*, The history of the African pyrethrum industry, 439; appointed Society's representative on the Chelmsford Trust, 458; *disc.*, A century of British education in India, 505; *disc.*, The technical development of eastern Commonwealth countries under the Colombo Plan, 663; *disc.* and *vote of thanks*, The uranium and thorium resources of the Commonwealth, 716, 718; *chair*, The contribution of psychiatry to modern medicine, 836
- Shabani, P. K., *disc.*, Flies in alliance with industry, 254; *disc.*, Technical education: an assessment, 265; *disc.*, The mechanization of building constructional processes, 340; *disc.*, Some achievements of the International Geophysical Year, 421; *disc.*, The biological control of agricultural pests, 488; *disc.*, A century of British education in India, 504-5; *disc.*, Packaging progress, 635; *disc.*, The technical development of eastern Commonwealth countries under the Colombo Plan, 663; *disc.*, The uranium and thorium resources of the Commonwealth, 715; *disc.*, The art of the Australian aborigines, 861
- Shenau, P. T. A., *disc.*, A study of the pollution of the Thames estuary, 473
- Shenon, Sir Alfred, *obituary*, 517
- Shoobert, Sir Harold, *disc.*, The technical development of eastern Commonwealth countries under the Colombo Plan, 664-5
- Shore, Lt.-Col. B. C. G., *correspondence*, 'Stones of Britain', 59
- Short, J. P., *disc.*, Land utilization in the Commonwealth, 213
- Simmonds, Dr. F. J., *disc.*, The biological control of agricultural pests, 487
- Simpson, E. C., receives a Fothergill prize for 1958, 18; *essay*, Special hydrant-indicating nails, 51; awarded a Fothergill prize for 1959, 791; *essay*, Safety in paraffin oil heaters, 862
- Simpson, Dr. Keith, awarded Swinney prize, 160; receives Swinney prize, 230, 231
- Sinatra, N., *disc.*, The mechanization of building constructional processes, 341
- Sir George Birdwood memorial lecture*, A century of British education in India 1857-1957, by Professor M. S. Sundararam, 491

INDEX

- Skelton, Robert, *book review*, The arts and crafts of India and Pakistan, 220
 Skidmore, J. S., *book reviews*, The capture of Quebec, 784 ; Trafalgar, 785
 Smith, N. R., *disc.*, Improving the efficiency of the mining industry, 49
 Solomon, M. E., *disc.*, The biological control of agricultural pests, 486
 Some achievements of the International Geophysical Year, *paper*, by Dr. D. C. Martin, 406
 Southgate, Dr. H. A., *paper*, A study of the pollution of the Thames estuary, 459
 Southwell, Sir Philip, *vote of thanks*, Large scale organization and change : a study in oil marketing, 198
 Souvenirs Industry, design in, note, 443
 Speakman, Professor J. B., *Cantor lecture*, Research in wool, 731
 Special hydrant-indicating nails, *Fothergill prize essay*, by E. C. Simpson, 51
 Stafford-Clark, Dr. David, silver medal, *annual report*, 614 ; *paper*, The contribution of psychiatry to modern medicine, 836
 Stamp, Dr. L. Dudley, *paper*, Land utilization in the Commonwealth, 199
 Stapley, J. H., *disc.*, The biological control of agricultural pests, 486
 'Stones of Britain', *letter from Lt.-Col. B. C. G. Shore*, 59
- STUDIES IN THE SOCIETY'S ARCHIVES :**
- III. Notions of economic policy expressed by the Society's correspondents and in its publications : pt. ii. The employment of the poor and the preservation of the structure of society, by D. G. C. Allan, 55
 - IV. Notions of economic policy . . . : pt. iii. Internationalism, scientific 'improvement' and humanism, by D. G. C. Allan, 217
 - V. Protection for agriculture, the Society and the early paper industry, by Dr. D. C. Chapman, 361
 - VI. The Society of Arts and the Lunar Society of Birmingham, pt. i, by Robert E. Schofield, 512
 - VII. The Society of Arts and the Lunar Society of Birmingham, pt. ii, by Robert E. Schofield, 668
 - VIII. Thomas Wilkins, the Society's printer, and Lord George Gordon, by D. G. C. Allan, 774
- Study of the pollution of the Thames estuary, A, *paper*, by Dr. B. A. Southgate, 459
 Style and era in Church melody : an historical survey, *paper*, by Canon Greville Cooke, 134
 Summerson, Sir John, three *Cantor lectures*, The classical country house in 18th-century England : I. Patronage and performance 1710-40, 539 ; II. Progress and decline of the greater house, 554 ; III. The idea of the villa, 570
 Sunbeam, Professor M. S., *Sir George Birdwood memorial lecture*, A century of British education in India 1857-1957, 491
 Swanzy prize, awarded to Dr. Keith Simpson, 160 ; cup, 230 ; presentation, 230, 231
- T
- Taylor, Sir John, receives silver medal, 17
 Taylor, Myron C., *obituary*, 517
 Taylor, Sir Reginald, *chair*, Road development in the overseas territories, 270, 289
 Teague, Walter Dorwin, *Trueman Wood lecture*, The growth and scope of industrial design in the United States, 640 ; silver medal, *annual report*, 614
 Technical education : an assessment, *paper*, by Lord Nathan, 255
 'Technology to-day and to-morrow', *note*, 361
 Thomas, Charles, *book review*, Medical biology and Etruscan origins, 271
 Thomas, Mark Hartland, *book review*, Modular 2, 300
 Thomas Gray memorial trust, offer of prize for 1959, 306 ; *annual report*, 606
 Tidbury-Beer, Sir Frederick, *obituary*, 298
 Tizard, Sir Henry, *obituary*, 267
 Todd, R. W., *disc.*, The consulting engineer and his contribution to the national economy, 179
 Tolansky, Professor S., *book review*, The individual and the universe, 517
 Tolansky, Mrs. S., *see* exhibitions
 Tonge, G. E., *chair*, Modernizing the railways—motive power and operation, 19
 Tonkinson, E., *note*, The A.B.C.C. commercial apprenticeship scheme, 360
- Trade and the bamboo curtain, *paper*, by the Earl of Verulam, 807
 Travel grants in the field of the arts, *note*, 296
 Tritton, Julian S., *paper*, The consulting engineer and his contribution to the national economy, 163 ; silver medal, *annual report*, 614 ; judges Howard prize, 791
Trueman Wood lecture, The growth and scope of industrial design in the United States, by Walter Dorwin Teague, 640
- U
- Ubbelohde, A. R., *book review*, A history of western technology, 589
 Uranium and thorium resources of the Commonwealth, *paper*, by S. H. U. Bowie, 704
- V
- Varley, Professor George C., *Fernhurst lecture*, The biological control of agricultural pests, 475
 Vaughan-Morgan, J. K., *chair*, The consulting engineer and his contribution to the national economy, 163
 Venables, Dr. Ethel C., *correspondence*, Examination wastage, 60
 Venables, Dr. P. F. R., *book review*, The technical writer, 784
 Verulam, Earl of, silver medal, *annual report*, 614 ; *paper*, Trade and the bamboo curtain, 807
 Vincent, Professor J. J., *Cantor lecture*, Research in cotton, 747
- W
- Wallis, Neville, *note*, Exhibitions on tour and in town, 53 ; *book review*, The pictorial encyclopedia of art, Modern German painting and A concise history of art, 150 ; *note*, Some modern art exhibitions, 357 ; *book review*, Picasso : his life and work, 447 ; *notes*, Royal Academy summer exhibition, 507 ; the Edinburgh festival, 770 ; Romanesque exhibition at Manchester, 864
 Warner, Sylvia Townsend, *Peter Le Neve Foster lecture*, Women as writers, 378
 Warren, Hugh A., *disc.*, Technical education : an assessment, 265 ; *book review*, Technical colleges and colleges of further education, 783
 Waterhouse, Professor E. K., *chair*, *Fred Cook memorial lecture*, Illusionist decoration in Central Italian painting of the Renaissance, 309
 Waverley model competition, 1959, *note*, 361
 Weeks, Dr. E. P., attends Albert Medal presentation, 595
 Wegner, Hans J., appointed Hon. R.D.I., 528
 Well-earned premium, A (Thomas Moore), *note*, 442
 Wellington, Alan, *disc.*, Packaging progress, 636
 West, Dr. T. F., *paper*, The history of the African pyrethrum industry, 423
 Whewell, Dr. E., *book review*, Handbook of textile fibres, 782
 Whinfield, J. R., *book review*, Big molecules, 63 ; *Cantor lecture*, Research in man-made fibres, 762
 Whitaker, John H., *disc.*, Modernizing the railways, 32
 Whitehead, Fred, receives Sir Frank Warner memorial medal, 18
 Whittick, Arnold, *book review*, Some outstanding clocks over 700 years, 521
 Widdicombe, E. J., *disc.*, Modernizing the railways, 31 ; *disc.*, Packaging progress, 637
 Williams, Professor D., *disc.*, The uranium and thorium resources of the Commonwealth, 717
 Williamson, S. C., *disc.*, Trade and the bamboo curtain, 18
 Wohl, Berthold, appointed R.D.I., 528
 Women as writers, *Peter Le Neve Foster lecture*, by Sylvia Townsend Warner, 378
 Woof, Leonard, *chair*, *Peter Le Neve Foster lecture*, Women as writers, 378
 Work of the Historic Churches Preservation Trust, *paper*, by the Earl of Euston, 676
 Wright, John, *book review*, Puppets and puppetry, 522
- Y
- Young, Dr. A. M., *disc.*, Some achievements of the International Geophysical Year, 421

